

American Artisan and Hardware Record

Sheet Metal - Roofing - Warm Air Furnaces - Stoves

Vol. 93, No. 12.

CHICAGO, MARCH 19, 1927

\$2.00 Per Year

YOU WILL KNOW BETTER HEATING WHEN YOU USE

Success
Heaters



*A Few of the Many Points Which Make
Success Heaters Successful
and Popular*

Unusually large amount of smooth prime heating surface.
Made of Armco-Ingots iron plates, riveted and caulked by
special machinery, making the heater absolutely gas,
smoke, and dust proof.

Special fire pot of cupola brick moulded to fit each individual size, and corrugated, allowing air at high temperature to enter the fire pot at the point of combustion.

Large indirect radiator constructed with direct and indirect draft damper operating from front of heater.

Grates easier to shake, easiest to replace and economical in operation.

Humidifier—special large vapor pan with tight fitting door placed above feed doors where greatest amount of water can be evaporated.

Double, tight feed doors of large size having tuyere or smoke consumer in lower section.

Check damper and draft regulating plate of best type.

*Write for our booklets and catalogs—
all the above and many other features
illustrated and described in detail.*

Success Heater Manufacturing Company
Des Moines, Iowa

SUCCESS HEATER
BUILT LIKE A BOILER RIVETED SMOKE-TIGHT



Don't Worry About the Jobs Your Competitor Gets —

DON'T lose any sleep over the jobs your competitor gets that you think you ought to have had. Sell the Mueller line, and use Mueller sales promotion helps—as so many successful Mueller dealers are doing. Then your competitor will be entitled to a couple of cheers for every job he lands!

Right now, in March, Mueller dealers are already preparing for next Fall's big sales offensive. Right now they are making their heating surveys (we furnish the complete working plan), locating prospects for 1927 installations, and organizing the various sales and advertising units that Mueller provides. And right now they are getting their share of new installations.

The Mueller line is a *profitable* line to sell because Mueller Furnaces, Convectors, Registers and Fittings give the customer complete satisfaction—and Mueller gives Mueller dealers complete sales co-operation.

Ask the Mueller salesman for full details.

L. J. MUELLER FURNACE COMPANY
193 Reed Street MILWAUKEE, WIS.

Established 1857

Makers of Coal and Gas-Fired Heaters for Warm Air, Steam and Hot Water, Cabinet Heaters, Combination Tank Heaters and Garbage Burners, Registers, Furnace Pipe and Fittings

Warehouses: Boston, Baltimore, Detroit, St. Louis, St. Paul, Minneapolis, Ft. Collins, Colo., Salt Lake City, Seattle

Mueller Double Radiator Furnace—a self-cleaning warm air furnace with more direct heating surface than any other furnace of equal grate area. Actually tons of coal cheaper in operation.



Mueller Full-Front Return Flue Furnace—The latest addition to the Mueller line. Full front, with projecting ash pit and feed section set in place without bolts. Upright shaking device with triangular duplex grates.

MUELLER FURNACES

TONS OF COAL CHEAPER

easier to sell than to sell against

The Super-Smokeless Has No Competition!

The SUPER-SMOKELESS Furnace is the only really smokeless furnace on the market. It brings satisfied customers and earns big profits.



VIEW OF CASTINGS OF THE SUPER-SMOKELESS FURNACE

THE SUPER-SMOKELESS Furnace is without doubt the best furnace from the home owner's point of view. The Dealer who sells them places himself in a class apart—actually above competition. One installation leads to others, and enables the Dealer to build his business and increase his profits.

The SUPER-SMOKELESS Furnace will burn soft coal without smoke, utilizing the smoke and gases as valuable fuel. It will also burn hard coal with the highest efficiency and fuel economy. Actual tests and thousands of installations have proved conclusively the fuel saving qualities of this remarkable furnace, both with soft coal and hard coal.

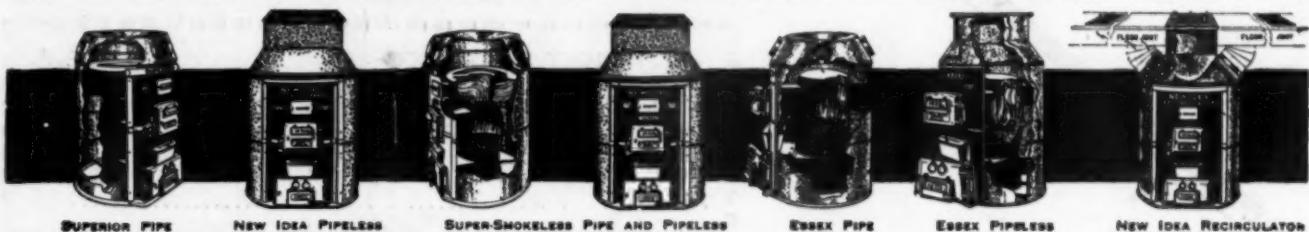
The SUPER-SMOKELESS Furnace is distinctly a "feature" furnace. It possesses such modern scientific features as: One-Piece Radiator and Feed Section; Frameless Feed and Ashpit Doors; Scientifically-proportioned Feed Section; Direct-connected Cleanout; Large Convenient Air Moistener; and patented "Slip-on" Casing Connections.

The Utica Heater Company has manufactured high grade heating equipment for forty-seven years. We stand behind our dealers and help them sell the furnaces they buy. We do not sell or install direct, and do not intend to. It will pay you to write for our Exclusive Dealer Proposition. DON'T DELAY—WRITE TODAY.

UTICA HEATER COMPANY

UTICA, N. Y. — CHICAGO, ILL. — MANUFACTURERS OF THE

CELEBRATED LINE OF WARM AIR FURNACES FOR EVERY HEATING NEED



Published Weekly by American Artisan and Hardware Record, Inc., 620 South Michigan Avenue, Chicago, Illinois.
Entered as Second Class Matter June 25, 1897, at the Post Office at Chicago, Illinois, under act of March 3, 1879.

WANTED; Good Warm-Air Heating Installers

WE are looking for dealers who are, first of all competent installers—men who can plan and install any warm air heating job in a way that will win the enthusiastic approval and endorsement of the home owner.

If you can do that and are anxious to build up your business with a furnace that has proved its merit as the greatest furnace value ever seen, a furnace that has enabled many other dealers to build up large substantial and profitable businesses from very small beginnings in a few years' time, we can help you.

It doesn't matter how many furnaces you sold last year.

Many of our established dealers who buy in car loads and sell anywhere from 200 to 2,000 furnaces a year were not selling more than three or four furnaces a year when they saw the light and went Rybolt.

If you have the knowledge, ability and desire to do a first class job of installing plus the "go get 'em" spirit we can show you how to sell more furnaces, make more money and become a force in your community.

Sign and mail the coupon now for full particulars.

**The RYBOLT
HEATER COMPANY**
Ashland, Ohio

**The Improved Rybolt—
The Finest Furnace
Value Ever Seen**



THE RYBOLT HEATER CO.
Ashland, Ohio

Gentlemen:—Send me your catalogue and full Rybolt Agency details.

Name

Address

A.A.

build your business for the *years ahead*

IN these days of immense production, quick profits and big business, there is a strong temptation to look at the profit sheet with too much longing to see it jump up rapidly.

Business men in any line who *produce for profit* instead of healthy growth of industry usually in the end find themselves in a weakened condition to battle for the business that we all know is waiting for us in the years ahead.

Weir



The MEYER FURNACE CO.
Peoria, Illinois

The warm air heating business is now in a healthier condition than ever before. More real first class warm air heating installations and high grade furnaces are being sold to the public on the basis of health, comfort and superiority than ever before.

And the men selling on this basis are as a rule making the most and best profit.

We believe that it is to the best interests of all concerned to take advantage of this healthy condition and *build on it* in order to *get the most* out of the business in the years to come.

Steel Furnace

Sell the Furnace That Satisfies Permanently—Boiler Plate Steel



THE Western Boiler Plate Steel Furnace is not only gas tight while it is new, but permanently. The heavy copper bearing boiler plate steel with welded or cold riveted and calked joints makes the tightest and most durable construction known.

Although the Western Boiler Plate Furnace has always been an unusually well built heater, it has recently been improved by enlarging the radiator and by the use of heavier grates and heavier construction throughout. Yet its price is still such as to compete with a cast iron furnace.

It is Economical in operation. Designed on a common sense plan, without useless frills, but including the essentials of economical combustion—unusually large seamless radiator, with V-baffle, hot blast gas consumer, large brushing surface.

It is Practical in design with features which actually add value in service, such as corrugated top to take up expansion and contraction, one piece body construction without rivets on front extension, and heavy double grates which are easily shaken from a standing position.

Ask for our special dealer's proposition, which includes long profits, easy terms, and a special selling plan with many advertising helps.

Western Steel Products Co.

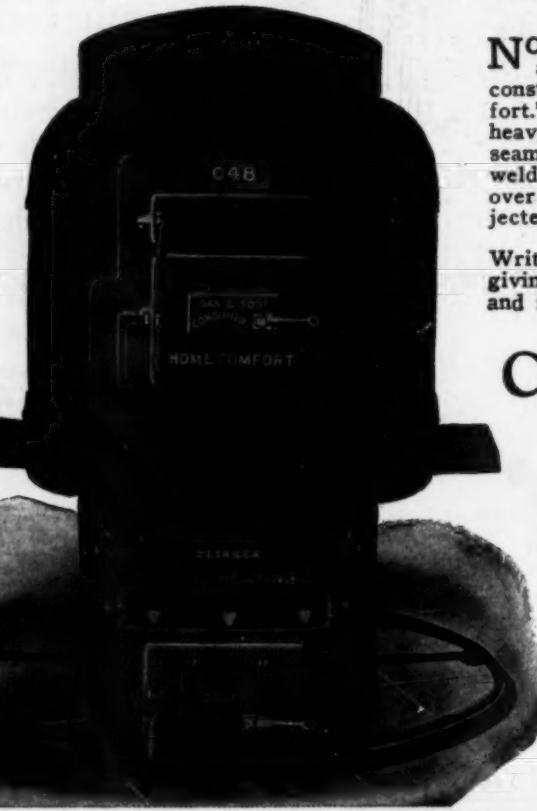
130 Commonwealth Ave. Duluth, Minn., U.S.A.

Built for Speed and Endurance, Too—

STEEL construction—air tight and with immense radiating surface—this gives quick heating.

But be sure you get durable, sturdy construction along with steel. You can assure your customers of many years of real severe heating services with the

“HOME



“HOME COMFORT”

Steel Furnaces are sold only to the trade—The agency is an assured money maker. Let us outline the Home Comfort Agency plan to you now. Write for our booklet "The Joy of Home Comfort."

NOTICE the large double doors and the solid, sound front construction on the "Home Comfort." The dome is one piece heavy gauge steel plate. The one seam is tight riveted practically welded and is in front directly over the feed door where it is subjected to the least heat.

Write today for complete catalog giving full detailed information and numerous illustrations.

COMFORT”

**ST. LOUIS
HEATING
COMPANY**

2901-11 Elliot Avenue
St. Louis, Missouri

PITTSBURGH DISTRIBUTOR
Wagener Bros., 3605 East Street

The ROBINSON Line

FOR THE DEALER AND JOBBER

THE ROBINSON STEEL FURNACE

A Leader for Sixteen Years

QUICK ACTION GAS FURNACE

ROBINSON HEAT DISTRIBUTOR

ROBINSON SMOKE CONSUMER  and

THE ONLY METAL CLOTHES CHUTE DOOR MADE

Our Sales Policy

We believe that no manufactured article is any better than the cooperation given by the manufacturer.

WRITE FOR OUR PROPOSITION TODAY

THE A. H. ROBINSON COMPANY

5103 Detroit Avenue

Cleveland, Ohio

• NIAGARA • FURNACES

Abound with features of construction that ensure added comfort, fuel economy, easy operation and long wear.

Our Laboratory tests every step from raw materials to finished product.

Every furnace is mounted and assembled before leaving our plant to ensure proper fit.

Niagara Dealers know that they are made right and will perform right.

*Write or wire us for complete information
on Niagara Furnaces at once*

The Forest City Foundry & Mfg. Co.

1220 Main Avenue

Cleveland, Ohio



The Smoke Goes Up the Chimney

Yes, it certainly does from this newly designed Moncrief Furnace, for with its solid one piece radiator, solid one piece feed section and solid one piece ash pit, the smoke hasn't a chance to get out and go anywhere else.

This is a great point, and Moncrief Furnaces have eleven other great points worthy of your attention.

Send for details

**The HENRY FURNACE
& FOUNDRY CO.**

3471 E. 49th St. Cleveland, Ohio

*The
Series "C"
New
This Year*

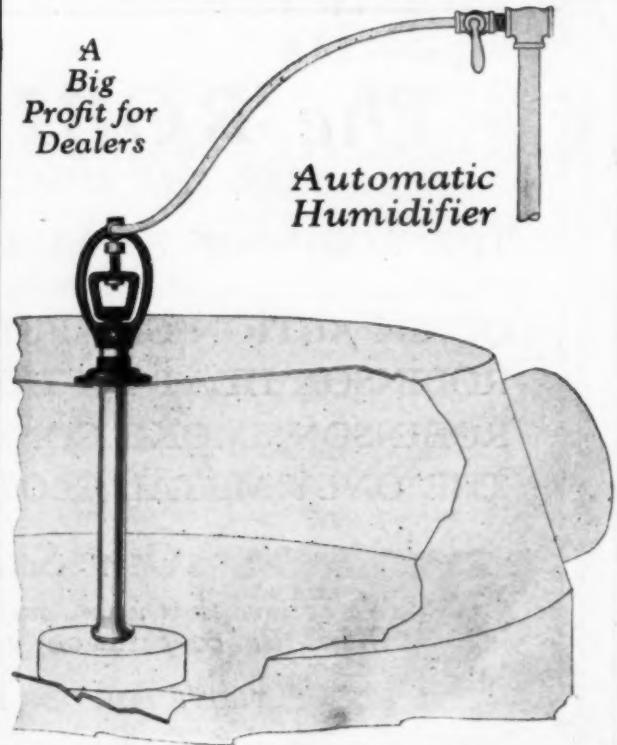


MONCRIEF FURNACES

Say you saw it in AMERICAN ARTISAN—Thank you!

*A
Big
Profit for
Dealers*

*Automatic
Humidifier*

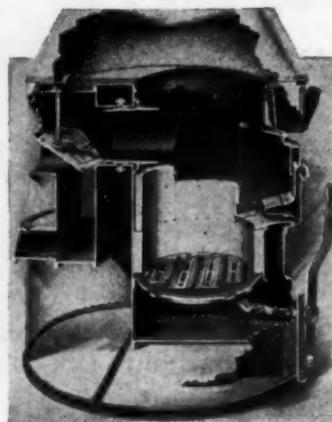


THE Automatic Humidifier or Air Moistener is the only device on the market today which will unfailingly produce UNIFORMLY PERFECT HUMIDITY!

Write for special prices and terms.

**AUTOMATIC HUMIDIFIER COMPANY
408 FREDERICK ST. WATERLOO, IOWA**

The Williamson BOILER PLATE FURNACE



In adding the Boiler Plate Furnace to its line, this company is merely extending into the steel furnace field the leadership which it has attained in the manufacture of cast furnaces.

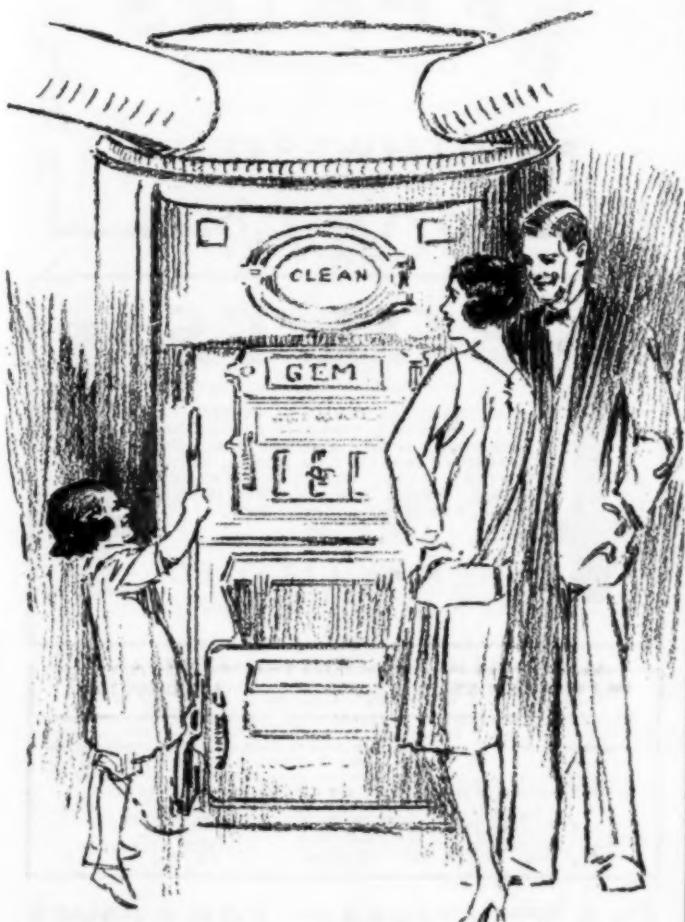
The Williamson Boiler Plate has exclusive features which instantly remove it from the ordinary furnace of this type.

It is all-welded, making it permanent, gas and dust tight. Dome made from copper-bearing, blue-annealed, locomotive firebox steel—radiator made from Armco iron. Double baffle in radiator splits the hot gases into two streams so that all radiating surface is fully utilized—an exclusive feature. Hot-blast smoke-consumer in door and special vents in firebrick lining supply hot oxygen directly over the flames, consuming all the heat elements in the fuel. Designed with the demands of the oil burner in mind, making it ideally adapted to any fuel.

Many other attractive features further emphasize the superiority of the Williamson Boiler Plate Furnace. New and interesting sales policy gladly submitted. Make sure of your territory NOW.

**The Williamson Heater Co.
Cincinnati, Ohio**

A Child Can Operate It



The Robinson "Gem" Lever Shaker makes sales easier—

Easy operation is a convincing point when talking to the customer. The woman of the house is vitally interested. Tell her that a child can operate the "Gem" lever shaker. She can readily appreciate that point. It's just as easy as operating the vacuum cleaner or the gear shift on an auto.

This is but one of the many superior, outstanding features of the Robinson "Gem." It also has a one-piece radiator, two-piece firepot, double feed doors, full cast front, etc. Every "Gem" is guaranteed full size. The fact is, through and through, the "Gem" is oversize.

That isn't all. This quality furnace is still in the competitive field. For the dealer who sells only a few or hundreds of furnaces a year, the "Gem" fills the bill.

Write for particulars of our dealer's proposition

The Robinson Gem
Robinson Furnace Co.
205 West Lake St., Chicago, Ill.



These features make
Vernois
Furnaces
easy to sell

¶ Special heat resisting iron is used throughout, assuring long life.

¶ Either of two styles of grate construction may be had—the ball bearing round grate with upright shaking lever, or the triangular, anti-clinker duplex grate bar.

¶ The long upright shaking lever makes stooping unnecessary and provides extra long leverage.

¶ the flange and lock-up joints in all castings are air-tight and will stay tight. No leakage of gas, air, or dirt.

¶ The large size ash pit and door make the removal of ashes a clean, easy job—a feature appreciated by every householder.

¶ The convenient water pan insures proper humidity at all time—a certain aid to health and comfort.

VERNOIS furnaces are profit makers. Hundreds of dealers all over the country are building up a reputation for themselves as well as a profitable business in this line.

Write today for our illustrated catalog and price list.

Mt. Vernon
Furnace & Mfg. Co.
Mt. Vernon, Illinois



Healthful, balm y
air like you breathe
in a pine forest
possible with the→

(Let us tell you how to obtain
the healthful odor of pine trees
in your home with the Humidair)



Here is an automatic hum-
idifier that is 100% efficient—yet economical.
IT is the only humidifier on the market having a Patented Hygrometer and sight feed
regulating automatic water supply. It is easy to install on the top of any furnace.
It is absolutely fool-proof—truly practical and above all GUARANTEED to please or
money refunded. Attaches to city water and will last a lifetime being constructed of
cast iron galvanized. Humidair ADDS years to your life!
You can make large profits equipping furnaces in your
territory. Write today for prices and full details.

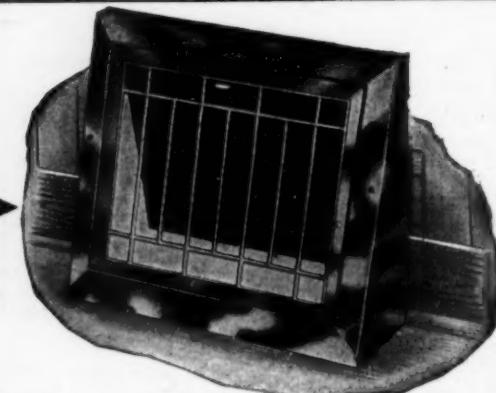
J. ROEMER HEATING COMPANY
THE BUILDERS' EXCHANGE
CLEVELAND, OHIO



FANNER STOVE AND FURNACE TRIMMINGS

For Quality and Service use
Fanner Trimmings. We operate
our own Malleable and Gray
Iron Foundries.
Write today for latest illustrated
catalog which lists and describes
our complete line.

THE FANNER MFG. COMPANY
BROOKSIDE PARK
CLEVELAND, OHIO.



Yes, we admit
it's Attractive
it's Efficient
it's Economical
it's the Vol-Yum register
for volume Furnace work
for volume Profits.

Mail coupon today for interesting prices and information.

Rock Island Register Co.,
Rock Island, Ill.

YOU may send your interesting prices and information on Vol-Yum registers.

Name _____
Street No. _____
City and State. _____

Mention AMERICAN ARTISAN in your reply—Thank you!

FURNACE
S
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HEATER
GUARANTEED
PERFECT FIT
REPAIRS
Large Complete Stock
Accurate Prompt Service
NORTHWESTERN
STOVE REPAIR CO., CHICAGO
BOILER



BOLTS

WE MANUFACTURE A COMPLETE
LINE OF BOLT PRODUCTS, INCLUDING
STOVE BOLTS, CARRIAGE BOLTS,
MACHINE BOLTS, LAG BOLTS, NUTS,
COTTER PINS, ETC. ALSO STOVE
RODS, SMALL RIVETS AND HINGE
PINS, CATALOG ON REQUEST.

THE KIRK-LATTY CO.
1971 W. 85th St. Cleveland, O.

CLEAN FURNACES BY VACUUM

FURNACEMEN—Clean furnaces by vacuum. It's quicker,
cleaner and more convenient. The Sturtevant Furnace Cleaner
cleans thoroughly, cuts cleaning time in half, and gives furnace men
an opportunity to handle more business. It's portable, comes
completely equipped with brushes, scrapers, etc. Hundreds of
satisfied users. Write TODAY for catalog and information.



Hyde Park,
Boston, Mass.

**PATTERNS FOR STOVES
AND HEATERS**
THE CLEVELAND CASTINGS PATTERN COMPANY
CLEVELAND, OHIO

PATTERNS
FOR STOVES AND HEATERS
VEDDER PATTERN WORKS
FIRST-CLASS
IN WOOD and IRON
ESTABLISHED
1835 TROY, N.Y.

**IRON AND WOOD
STOVE PATTERNS**
QUINCY PATTERN COMPANY
QUINCY, ILLINOIS

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**AMERICAN ARTISAN AND
HARDWARE RECORD**
When writing to advertisers



Speaking of Service

Over 85% of
All Orders
Received in Our Plant
on a morning are
“On Their Way” by
Not Later than 4:30 P.M.
THAT SAME DAY!

F. Meyer & Bro. Co.
PEORIA, ILLINOIS

Founded 1880

American Artisan
and
Hardware Record

Published to serve
the
Warm Air Furnace,
Sheet Metal, Roofing
Stove and Hardware
Industries

Published **EVERY SATURDAY** at 620 South Michigan Avenue, Chicago

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Etta Cohn
J. F. Johnson

G. J. Duer
Frank McElwain

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AN ACHIEVEMENT

An explanatory note regarding service to readers of AMERICAN ARTISAN. This paper is now nearing the completion of a half century of service. For almost fifty years it has catered to the needs of the men in the industries which it represents. At no time during its long and successful career has AMERICAN ARTISAN been in a better position to render complete, adequate service to its readers than it is today. In addition to the matter contained in our regular weekly publication, we maintain Service Departments for the use of our readers. If you have a problem to solve, we courteously invite you to submit it to us for solution. In what better way can we learn of your problems than from you direct?

To Progressive Dealers and Distributors

A Challenge and A Promise

The Challenge

LAST year's business should always be a CHALLENGE to the next to go it one better. We all of us hate to stand still, to mark time, to wait. We want to be moving ahead always. That is bred in the bone of every red-blooded business man.

In the last four years, we have made a consistent increase in sales of our Marshalltown Line of Steel Furnaces. In January, 1927, we sold over three times as many furnaces as in January, 1926.

Our Challenge to ourselves is to double this output in the next year. And this is the Challenge we wish you to make for your own business in 1927.

Marshalltown Heater Co. Marshalltown, Iowa

Representative Dealers and Distributors

Anchor Sanitary Co.
Pittsburgh, Pa.
Fairmont Wall Plaster Co.
Fairmont, W. Va.
Clemens Furn. & Sup. Co.
Canton, Ohio
Clifton Tin Shop
Indianapolis, Ind.
Wells Furn. & Sup. Co.
St. Louis, Mo.
R. M. Baker Sht. Mtl. Wks.
Toledo, Ohio
Northwest Furn. & Sup. Co.
4017-19 No. Cicero Ave.
Chicago, Ill.
South Town Htg. Co.
525 W. 103rd St., Chicago, Ill.
McEwen Furnace Co.
Kansas City, Mo.

Marshalltown Htg. Co.
Minneapolis, Minn.
Landskroener & Koeppen
Flint, Mich.
W. J. Porter
Lansing, Mich.
Hastings Sht. Mtl. Wks.
Hastings, Nebr.
Leonard Co.
Wakarusa, Ind.
Stove Dealers Supply Co.
Milwaukee, Wis.
H. Reinsdorf
Kenosha, Wis.
Aristocrat Htg. Co.
Moline, Ill.
Abilene Hardwood Lbr. Co.
Abilene, Kans.
Messenger Parks Mfg. Co.
Aurora, Ill.

The Promise

TO help you make good on this Challenge to double your sales of Marshalltown Steel Furnaces in 1927, we promise to assist you in the following practical and effective ways:

- [1] By offering you our Marshalltown Line on a bona fide Co-operative Merchandising Plan, which will enable you to fill all orders promptly, losing no business or good-will through delays, and on a basis that will be highly profitable to you.
- [2] By helping you to secure definite prospects for sales.
- [3] By giving you definite plans and methods for closing sales and building up good-will for your entire business future.

*Send This Coupon Today
for Our Co-operative
Merchandising
Plan*

• • •
NO OBLIGATION

*Write in Full
Confidence*

THE MARSHALLTOWN LINE TO GREATER PROFITS
MARSHALLTOWN HEATER COMPANY, Marshalltown, Iowa
Please send without obligation complete details about your Co-operative
Merchandising Plan for doubling my Furnace Sales in 1927.
I sold _____ Signed _____
Address _____ City _____ State _____

Greater Profits For You!



**Smoke Consuming Model
converts smoke and soot
into heat**

As fresh air enters the inlet intense combustion takes place—all the soot and volatile gases are burned and turned into heat.

WITH THE
ECONOMY
Less fuel - more heat
**BLUE FRONT
FURNACE**

YOU merely specify "with smoke consumer" and you get the Economy Blue Front Smoke Consuming Furnace at the same low price that you would pay for the regular pattern. Volume production and efficient manufacturing methods enable us to give you this extra value.

Such a low first cost helps you make more profit. Give your customer a quality Code installation with this quality furnace and he will be glad to pay your price.

Economy Blue Front Furnaces (for hard or soft coal), are thrifty with fuel, easy to operate, and lavish with warmth.

Our new circular describes our smoke consuming model in detail. Ask for 1928-A.

INTERNATIONAL HEATER COMPANY

NEW YORK CHICAGO PHILADELPHIA CLEVELAND DETROIT NASHUA, N. H.

Canadian Distributor: Heating Supplies, Ltd., 902 Home Street, Winnipeg, Manitoba, Canada

Mention AMERICAN ARTISAN in your reply—Thank you!



American Artisan and Hardware Record



Vol. 93.

CHICAGO, MARCH 19, 1927

No. 12.



Milwaukee Auditorium, Milwaukee, Wisconsin, Roofed with Sheet Copper by the Goethel Sheet Metal Works, Milwaukee, Over Three Years Ago and Showing No Sign of Deterioration

Copper Roof Protects Milwaukee Auditorium Against Weather

Roof Shows No Sign of Deterioration After Four Years—Erected by Goethel Sheet Metal Works

FOR more than three years the copper roof on the Milwaukee Auditorium has been giving excellent service, and as yet there has been no reason to make even the slightest repair.

Copper Laid Over Tile With Gypsum Filler

Four years ago, when the officials of the Milwaukee Auditorium were debating what sort of material to use on the roof, in order to repair the tile, it was decided that cold rolled copper would best insure a permanent, serviceable roof.

The job was awarded to Alex. G. Goethel, of the Goethel Sheet Metal Works, Milwaukee, one of the

largest as well as efficient firms of its kind in this state. Mr. Goethel had had a great deal of experience in sheet metal engineering and was entirely familiar with the requirements of a large job of this kind.

The first difficulty he encountered was that of covering the semi-cylindrical tile and center rolls of tile which covered the entire roof of the large structure. The center and cylindrical rolls formed rolls extending from eaves to ridge at right angles. The surface of the tile was so irregular that the cold rolled copper could not be laid next to it. This necessitated a suitable foundation on which to lay the copper. This

was done by using gypsum, which is very plastic. The results were found to be very good, for it produced an entirely regular surface upon which to lay the copper.

How to Meet Expansion and Contraction

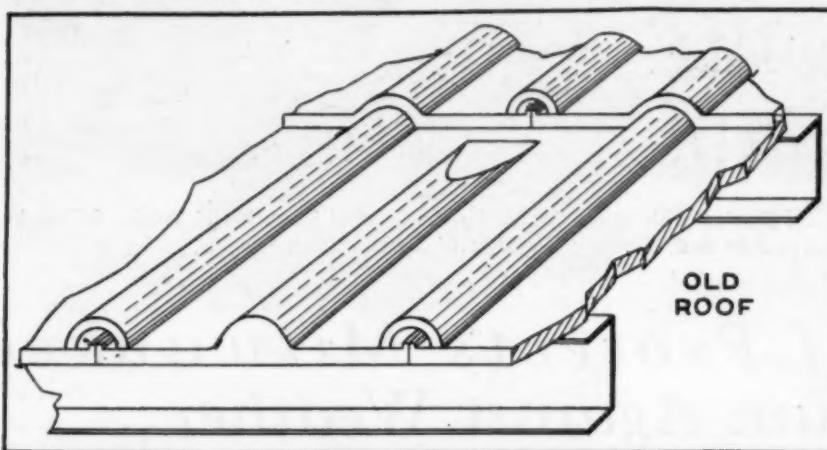
The next problem which presented itself was that of providing for the contraction and expansion of the copper. This was done by making use of the semi-cylindrical rolls of tile. The expansion joints and the standing seam were placed directly above the roll, providing for adequate expansion taken care of by two quadrants, having a three-inch radius, the farthest points of the



Close-up of the Roof as It Appeared When the Job was Completed, Showing the Scaffolding Still in Position

quadrants being exactly one foot apart. One notable fact was that

beautiful artistry as well as providing excellent service. They are five



The Old Roof as It Appeared Before the Copper Was Placed

one quadrant had its terminal in the base of the standing seam, the other having its terminal in the foot of an expansion loop.

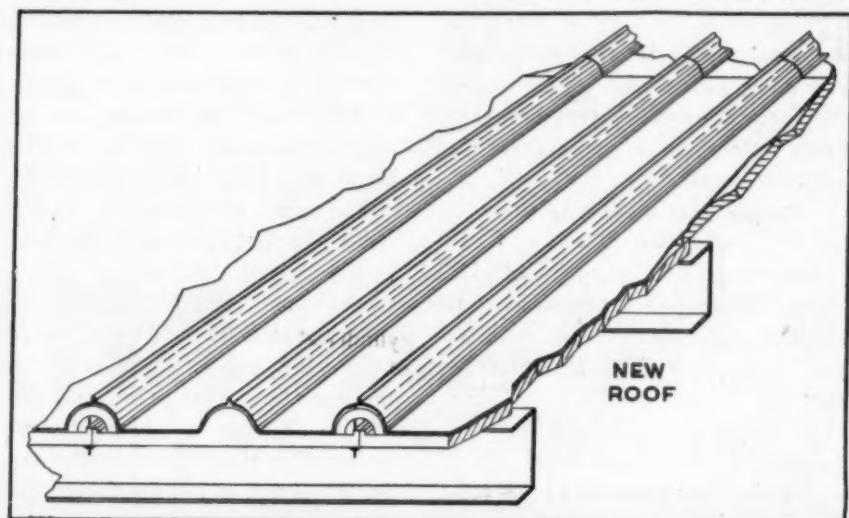
More than four thousand sheets of copper, thirty inches by ninety-six inches of 16-ounce copper were used on the job. It meant that more than fifty tons of weight was added to the roof, but the distribution was so uniform that it made for additional strength to the structure rather than weakening it. When figured out in pounds the total copper used on the job represents over eighty thousand pounds.

One feature of the roof is the two copper ventilators which take care of the exhaust of air from the auditorium. These are worked out in

feet six inches in diameter and are ten feet high.

Meeting Scaffolding Problems

The scaffolding on a job of this kind was a difficult problem to meet. The old gutter of the roof was made of galvanized iron and placed directly on top of the side walls of the building. With the new roof this had to be eliminated, for there was a new design, which had to be put into operation. The new gutter was placed completely outside the walls of the building. This added beauty, but it made necessary a more substantial scaffolding, for a triangular section of the wall had to be built in to support the bottom of the copper roofing. Accordingly, holes were punched through the side walls of the building about four feet below the roof line. This brought the



The New Roof, Showing a Cross-section of the Copper Laid

holes above the second floor ceiling and in the attic space. Large hemlock timbers, six inches by eight inches, were then set in these holes, the outer edges of the timbers projecting approximately five and one-half feet outward, with a railing on the outside and five ten-inch planks forming the scaffold wall.

Timbers were kept from moving out of place by supporting braces built downward from the bottom of the timbers, so that the contact of braces with the side walls of the building held the timbers rigidly in place. This was an easy type of scaffold to erect, at the same time giving adequate safety to the people passing on the street below. The firm also provided every member of the force with rubber soled shoes as an added precaution against accident. The rubber shoe has a very adhesive quality on timber, and, no doubt, prevented many smaller injuries which might have resulted.

In breaking the sheets for the laying of the roof, the breaking was begun from the center of the expansion joints and gradually worked to the edge of the sheet. Afterward the sheet was reversed and worked over to the other edge.

The problem of anchoring was met successfully by the Goethel Sheet Metal Works in laying the roof. This appeared to be very difficult at first, because the tile roof underneath was not very substan-



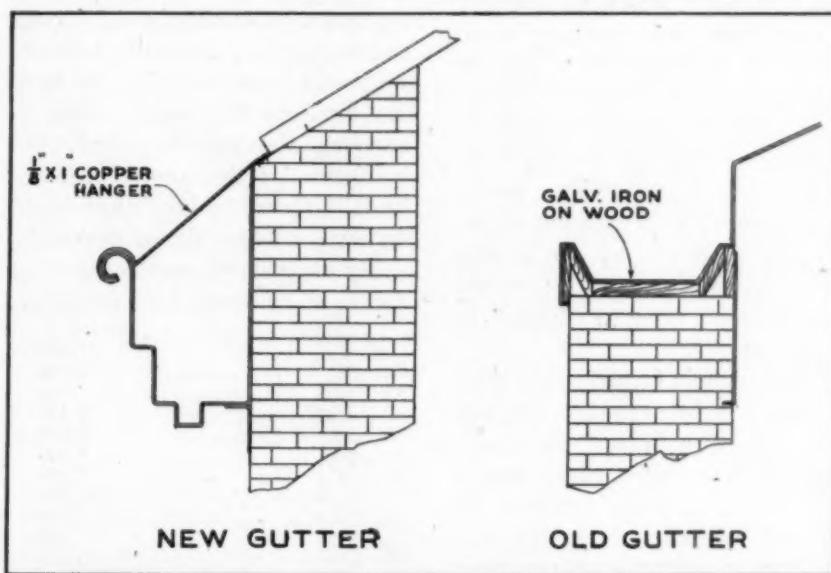
Close-up of the Ventilator on Top of the Roof, Which Is Also Made of Copper

tial. The use of nails and screws was almost out of the question.

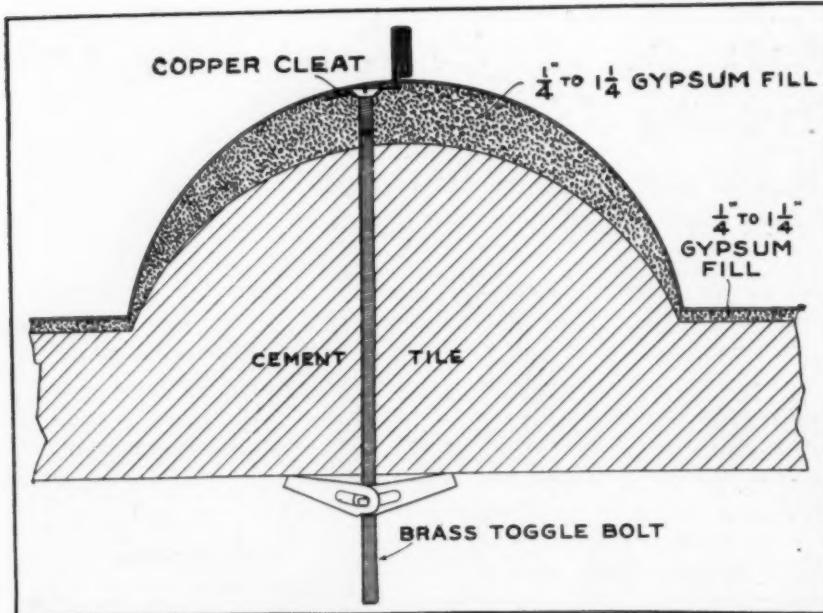
It was finally decided to bolt down the cleats. One-fourth by seven-

inch brass toggle bolts were used for this purpose. For the entire job more than 15,000 of these bolts were used. The use of these bolts necessitated the drilling of holes through the gypsum which had been used as a regular base, of the tile cover rolls and even the tile itself. For this purpose the air hammer type of star drill was used. The use of electric power for the driving hammer made the task somewhat easier than it might have been and the job was complete in a surprisingly short time.

The job as it stands today is a model of good workmanship. Although the cost of the roof ran up into large figures, the officials of the Auditorium are well pleased with its excellent appearance and its durability. It was very important to have a good roof on this large building, for it is here that most of



Showing the Construction of the Original and the New Gutters



Illustrating Method Employed to Form Flat Surface Upon Which the Copper Roof Could Lie and the Method of Anchoring the Roof

the conventions and trade exhibits are held in Milwaukee each year, and this revenue brings a great deal of money into the Auditorium treasury each season.

The Goethel Sheet Metal Works has profited well by this accomplish-

ment also, for it has been a wonderful advertising feature for them. At the time the new roof was completed the newspapers of the city and the state carried large full page stories, with pictures of the new roof and its various features.

Survey of World Zinc Conditions As of Last Month

Cost of Production Seen as Safety Valve in World Output

By A. J. M. SHARPE

A MONTH ago I mentioned with what concern marketing factors were viewing the expansion in production. After the publication of the United States statistics for December there came the announcement that the Belgian production for the same month, of 17,366 metric tons, constituted a record for the past 12 years, at any rate. The market thus was affected sentimentally and prices steadily gave way until at time of writing zinc is selling in London at under £29.

The safety valve as regards world output is, as I have ventured to observe in the past, the cost of production. This necessarily varies in different countries, and even, of

course, amongst individual smelters.

There are few smelting companies in Europe which possess their own mines: indeed, even the big Vieille Montagne Company is unable to produce all the ore it requires for its smelting works. Consequently, it is possible to arrive fairly closely at the selling price of slab zinc which would automatically force a decline in production.

The economic factor, as a matter of fact, lies between £26 10s and £28, varying with working conditions at different smelters, and a fair average would probably be £27 5s. Obviously, the shoe will first start to pinch the ore producer, inasmuch as the price paid for cala-

mines and blende is governed month by month by the market price of G. O. B. zinc in London.

This factor has, therefore, to be taken into consideration in fixing the basis cost of producing zinc in Europe at £27 5s as aforesaid. In my survey last month I stressed the significance of the fact that smelters dependent upon purchased ores for their raw requirements are not waxing rich, inasmuch as their profit is limited by what they can save out of £6.56 after payment of smelting, transport and marketing charges. That figure is based on zinc selling at £32 and is, of course, reduced now that zinc has further depreciated to under £29.

It may take two or three months for the industry to readjust its position in accordance with the low level of prices now ruling, but the laws of this industry are as inexorable as in others, and the present is no time for over-production.

The Belgian output for 1926, of 204,200 metric tons, is the highest since 1913, but, unless there is a substantial recovery in market prices in the present year, it is extremely unlikely that Belgium will output as great a quantity in 1927.

These notes are being dictated before I am in possession of your United States statistics for January, but having regard to the fact that ore on the Tri-State field is down to \$42, and slab zinc at St. Louis has been selling at under 6½ cents, I naturally have a feeling that if there be a surfeit of both ore and metal, as in December, the leading interests will not be long in applying the necessary brake on both, even if the corrective is not brutally forced by the failure of individual units to operate profitably.

My estimate of world stocks of zinc as at February 1st is as under:

	Metric Tons
United States	27,200
Canada	3,300
Australia (including unsold shipments afloat) ..	2,400
Germany-Poland	9,000
Belgium	4,200
France	1,200
Great Britain	1,300
Scandinavia	200
Far East	500
Elsewhere	1,500
Total	50,800

Sheet Metal Dan Says Be Sure to Get Good Pay for Good Work

No Business Can Be Run Without Prompt Pay in Sufficient Quantity

HERE is another of the series of stories by Sheet Metal Dan, issued by the Distributors' and Salesman's Auxiliary to the Sheet Metal Contractors' Association of Pennsylvania.

Sheet Metal Dan says: "There's just as good hearts and hands employed in the sheet metal business as in any other line, but a lot of us are lacking in business training.

"There are two things a sheet metal man has got to look out for in every piece of business he turns out—doing the work and getting paid for it. Doing the work is only half of it. Getting good pay for his work is what keeps the contractor in business. And by good pay I mean prompt pay. That means not only getting enough money for a job, but getting the cash at the right time. It means being paid without any fuss or feathers. Delays or disputes over payments are sure to cost money and cut down a fellow's profits.

"Lots of good business comes the smart contractor's way—desirable, clean-cut and profitable. Terms are fair, prices are right and pay is prompt. It's business every contractor likes, what he wants and what he really should have. It's business any contractor can pick and choose for himself, if he knows enough, out of all the propositions he decides to accept or reject.

"But not all business is as good as it looks. Like an apple, there's an inside as well as an outside to every job. The inside is the thing to watch out for, because the outside speaks for itself. And when a proposition looks specially tempting from the outside, that's all the more reason for being careful about the inside.

"You see, a guy has got to be able to pay his bills on time as well as willing to do so. Lots of people

have the best intentions in the world about paying their bills, but they bite off more than they can chew, or something comes up to keep them from settling promptly. When this happens, you don't want to be the one that's left holding the bag. No business is good until it's finally settled for, until everybody's happy and you've made some money out of it.

things you want to watch out for."

Sheet Metal Dan's address is 7253-55 Frankstown avenue, Pittsburgh, Pennsylvania.

Sheet Metal Dan's next story will be on "Running a Business of Your Own."

Trachte Brothers Have Important Catalog on Sheet Steel Garages

Trachte Brothers Company, Incorporated, Madison, Wisconsin, manufacturers of portable steel garages and other portable steel buildings, have recently issued a very attractive booklet on portable garages showing many new designs.

Progressive sheet metal contractors who are looking forward to gaining a substantial profit from the sale of sheet metal garages in the near future cannot afford to be without all of the latest information on the subject. Much information of value is contained in the catalog of Trachte Brothers on the subject, and they will be very glad to forward a copy of the booklet to accredited sheet metal contractors upon requests received upon the contractors' letterhead.

Sheet Metal Dan

"The Sheet Metal Contractors Association of Pennsylvania is a mighty good friend to have when you need to know something about a man you want to do business with. It would surprise you the amount of inside information they have about contractors and builders and architects. Like as not, they can tell you if you're a member, whether a man is prompt pay, slow pay or no pay at all. They've helped me out any number of times with straight tips and then I'd know whether to go ahead with a deal or not.

"Take it from me—getting paid for a job may be the last thing that happens, but it's one of the first



Fenn Hardware Company Gets Results from American Artisan Classified Advertisements

The Fenn Hardware Company, Delavan, Wisconsin, writes as follows about the service which AMERICAN ARTISAN has rendered it:

To AMERICAN ARTISAN:

Please discontinue our advertisement for a tinner. We are pleased to inform you that we had a choice of thirty-four applicants for the job as a direct result of the classified advertisement which appeared in your paper.

Practices Followed in Oxy-Acetylene Welding of Steel

By O. W. KOTHE, Principal St. Louis Technical Institute

HAVING considered the general characteristics of welding cast iron in our last article, it seems desirable that we get some understanding concerning steel welding for common work, as well as for high speed tool steel. In these articles it is difficult to select certain type problems that are good for instruction purposes. Some kinds of work are good for our railroad tradesmen, others for manufacturing purposes, and still others for general shop work, while some are exclusive for job purposes.

Following General Welding Practice

In view of this, we have selected problems such as best fits a general description. From these general features the reader can branch out in applying these principles to various lines of work. It is not always a person's own pet line of work, but often work is met with that is way out of the ordinary. In such cases the reader will have the process to follow and can help himself.

At Fig. 39 is shown a steel tank made of low carbon steel, or ordinary steel plate $\frac{1}{8}$ inch thick. The plates should be sheared square to correct sizes; thus the circumference will be $3.1416 \times 36 = 113.0976$ or $113\frac{1}{8}$ inches.

The length is arranged to the width of sheets in stock, and so may contain one or two cross seams. The dished ends can be bumped out with a raising or flanging hammer after which the edges are turned up by hand or with a machine. All edges are prepared for welding, either as at A or B of details in Fig. 40. But the longitudinal seams are first welded, allowing the edges to diverge about $\frac{1}{4}$ inch for each foot in length, so when the welding takes place and the metal draws together, a perfect joint will result. Often the edges are clamped, as at A, and the clamp is slipped back as the welding progresses.

Flux Not Needed in Welding Steel

In the welding of the end headers to the shell, either method, such as we show at C, D, E, F, G or H, may be used. The same holds good with pipe connections which can be made by means of an angle, pad, or merely inserting the pipe and welding, as details I and J show. No flux is really necessary when welding, as the steel should flow without it. If it does not flow sufficiently, then some flux such as is used for cast iron may be used.

When tanks of this kind are made they should be tested upon being finished. This can be done in two ways. One way is to connect up a water pressure gauge and fill the tank with water. Next insert an air pump to a length of pipe connecting with the tank and so force more water in the tank.

This is called the hydrostatic test, and any pressure desired can be set up, after which the tank is tapped with an ordinary hammer or mallet to "jar" the metal for faults. The second method is to pump the tank with air to any desired pressure—tap the seams with a mallet. Next take a brush and a vessel of soapsuds water and brush over all seams and connections. Any leak, the soap suds will show bubbles and indicate the leak.

Welding Heavy Steel Parts

Generally on average thickness of round bars, as shafting up to about 2 inches in diameter, the shaft ends are prepared as at M, Fig. 41. The steel bar must be well heated and take care so a thorough fusion is made and still not burn the metal. On still larger bars or pieces of steel the ends can be prepared as at N, but care must be taken to thoroughly fuse the vertical edges while building up metal.

Alloy Steel Welds

It should be remembered that any weld is a casting, no matter what the

metal may be, and that it is impossible in most cases to produce as satisfactory condition in the weld as in the original metal. Even with the best welding material and fluxes, unless the weld can be given the same rolling or forging treatment as that to which the original metal was subjected.

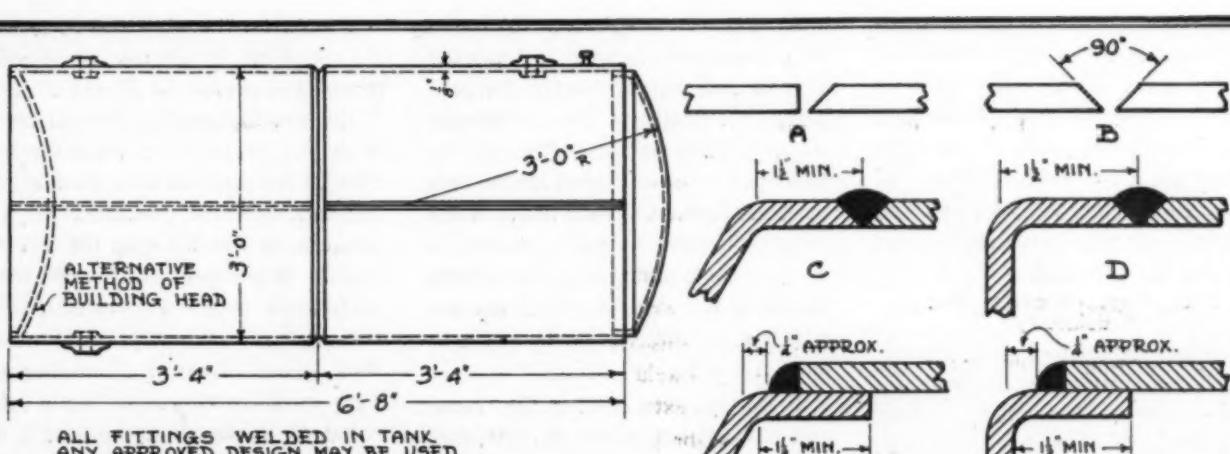
In the case of alloy steels, which are largely used in automobiles and such other machinery, the proper heat treatment must be given in addition to forging the steel. These results are generally difficult to obtain, because the piece cannot generally be forged, nor does it contain the necessary elements for successful heat treatment, since the joint is not a homogeneous weld. Then, again, no welding shop has the facilities for conducting such heat treatments.

Therefore in such cases a welded piece will not give satisfactory results. This is not the fault of the welder, of the material, or of the flux, but is an inherent limitation of the process, and it is, therefore, advisable to avoid welding such pieces of steel except in cases of emergency or for temporary purposes only.

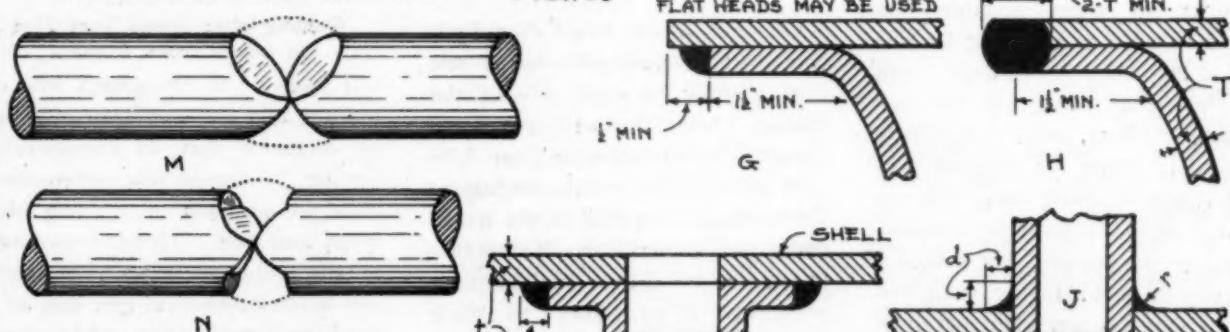
Welding Wire for Spring Steel

Where it becomes necessary to weld broken leaves in automobile springs (Fig. 42 and at O), or certain other springs for different purposes, this can be done with care. It has been found that to use ordinary old bed-springs which can be reclaimed from scrap yards. Ordinary welding-wire is not satisfactory and care must be taken in using this material not to burn it. A fairly large tip should be used and the work done quickly.

Steel castings can be welded by using the ordinary welding wire. It is often well to keep the pieces cut out of the V-groove while preparing, and so use the same metal for



WELDING OF TYPICAL TANK FIG. 39



WELDING OF STEEL BARS FIG. 41

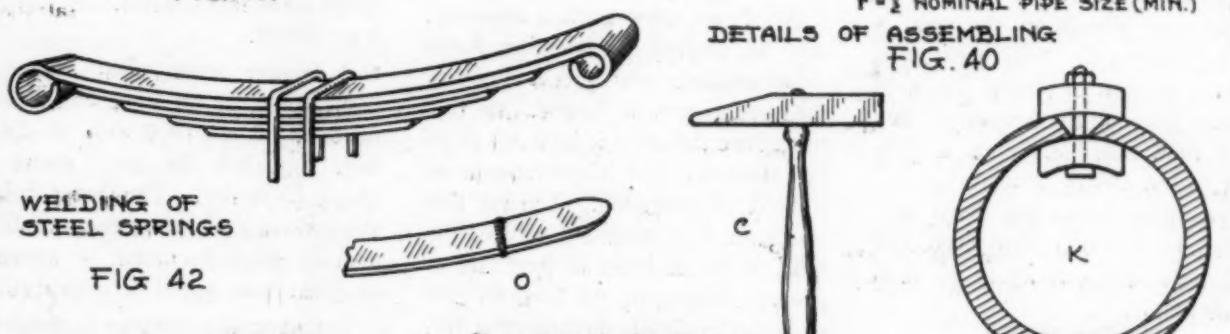


FIG. 42

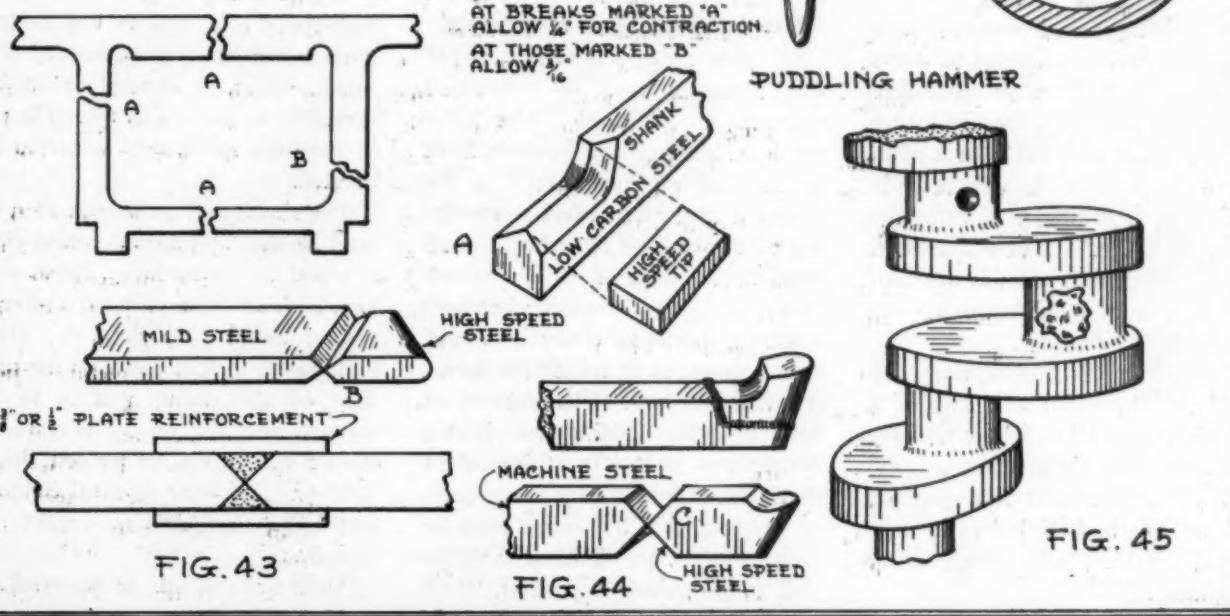


FIG. 43

FIG. 44

FIG. 45

welding purposes. At times ordinary welding wire is difficult to make a good weld, and then it is often possible to chip off surplus metal from other parts of the casting and use it for welding fill-in. If strength of joint is a consideration, ordinary cast iron must not be used as a welding material.

Tool Steel Welds Not Satisfactory

The welding of tool steel, according to some authorities, is generally unsatisfactory, particularly where the material is to do heavy cutting. It is not possible to avoid entirely the burning of the metal.

Borax or other suitable flux should be used as a coating for the steel to help keep the air away from it. The use of spring steel wire for welding or filling, and a rather large tip, and by using the quickest possible speed in doing the work—as good results as any can be obtained.

One of the reasons that makes it difficult to weld highly tempered steel is that the new filler merely is plastered on the outside and does not fuse sufficiently with the steel. Under such conditions the weld is easily broken off. Such welding is often a matter of doing the weld without drawing the temper out any more than possible, hence a sufficient fusion cannot be made.

But other authorities have succeeded in welding high-speed tool steel quite satisfactorily, as we shall see directly.

Puddling Process.

In welding heavy materials and where the steel is subjected to stress and strain, it is often an advantage to hammer the weld, thus restoring a better grade of steel than a plain weld could produce. As steel is made by forging or rolling, or burning the Bessemer process the impurities out, so any autogenous weld is also improved from its cast state to a form of steel by hammering.

Take for instance tradesmen who work in shops that are part of a manufacturing plant, where possibly a machine shop department is operated; the welder must be acquainted with welding broken frames for machines, engines, and much other equipment.

At Fig. 43 we show an example of a frame, whose section measures at least 5x6 inches. After due preparatory heating, the workman starts welding in the bottom of the V-shaped groove formed by the two beveled edges. On such heavy work as an expedient to start the weld a $\frac{3}{8}$ or $\frac{1}{2}$ inch plate should be tacked to the lower side of the frame on which a foundation can be made to start the weld.

Weld this plate solid to the frame and also welding edges of plate, this plate to extend out on both sides of frame the thickness of the reinforcing plate.

On such work there should always be two operators—that is, one man welding on each side of the frame. After the weld reaches a certain thickness, ranging from $\frac{3}{16}$ inch up to 2 inches (according to the work and the skill of the workman) the welder starts hammering the molten metal by a small hammer with piens of such shape to enable the metal to be reached at the base of the groove.

At C we show such a hammer, and by playing the welding flame simultaneously with the hammering the weld is sort of forged. By this procedure the weld is built up to its full thickness and it corresponds to a kind of puddling. During this operation it is necessary to cool the head of the hammer at intervals to prevent destroying the hammer. It is cooled by simply dipping in water.

Material Densified by Hammering

By this means, densification of the material and an increased strength is obtained. After the whole welding groove has been built up with filling material; it is the common practice to effect a smoothing of the surface by using a small hammer of about a $\frac{3}{8}$ to $\frac{1}{2}$ inch face; as the hammer becomes heated it should be cooled in water.

It is essential to successful operation that this kind of hammering be done while the welding seam is at a bright red heat. It is important that at any time during the process of welding, that the entire joint be kept red hot, the finished weld as well as the unwelded portion.

Even after the weld and hammering is done it should be evenly heated and permitted to cool slowly. If the welding seam is worked upon while at a temperature below the red glow of the material or with a larger hammer, internal fractures of the metal occur which impair the welded seam. Workmen who meet with such work should experiment, first making an ordinary weld, and then make others by hammering. Test each specimen to know the value of hammering, the length of time, the severity of the blows, the color of the metal and the thickness of the weld in each case.

Welding High Speed Tool Tips to Low Carbon Shanks

Those of our tradesmen who do welding and are employed in shops or factories that do considerable cutting by machinery, often meet with the problem of welding high speed tool steel. This is occasioned by the tool steel being quite costly and at times hard to get, and so it has been found that to weld a shank of machine or mild steel to the high speed steel tips perfect satisfaction is produced.

A welder must never play his flame too long on steel, since steel melts at about 1800 deg. to 2500 deg. F., while the torch flame is about 6300 deg. The latter being about three times or more powerful; it easily burns the metal. If melted, an entire heat would be destroyed.

The general procedure in welding high-speed tool steel to low carbon shanks is the preparation of the shank, which is beveled to an inverted V, as at A, Fig. 44. The tip of the high speed steel is not to be beveled.

The shank and tip should then be sand blasted, and then the sand dust is wiped off the surfaces. Next, preheat both of these parts to a cherry red or about 1375 deg. F. Then build up $\frac{1}{8}$ inch of metal on the surface of the shank that is to be welded, and also on the surface of the tip which is to be welded, using $\frac{3}{16}$ or $\frac{1}{4}$ inch nickel steel welding rod and a flux such as is used for cast iron.

Next place the tip in the position

it is to occupy and tack it and weld one side with a nickel steel rod. A flux is not necessary, although can be used sparingly. Then turn the tool over and weld the other side. Both sides should be welded from the end progressing toward the heavy portion of the shank.

By this procedure the low carbon shank will absorb heat more rapidly than the tip. As the flame is progressing toward the shank the tip is, therefore, subjected to as little heat as possible, and the shank will absorb the most of it.

Next set the tool up and weld the sides and top, where the high speed steel joins to low carbon shank. To perform this weld quickly, sufficiently large tips should be used and care should be taken that the flame is not played on one spot too long, or the metal will be burned. Some folks claim that Norway or Swedish iron rods and vanadium steel gives good satisfaction in such welding, while others give the preference to nickel steel rods.

Welded Tools Must Be Heat Treated

Because the physical properties of high-speed steel and ordinary tool steel are so different, strains are easily set up in welding. It is, therefore, necessary that welded tools be heat treated before cooling from a welding operation.

When possible a furnace should be used for this purpose. If the life of the tool is but of short duration, it is sufficient to bury the red hot tool in lime or asbestos as soon as welding is done. Another good method is to place the tool on end and insert it gradually into a tank containing any good mineral oil. This tempering or hardening process should take place directly after the welding operation and before the tool cools.

Mr. G. A. Hastings, in the *American Machinist*, says: "Our high-speed steel scraps consisted of all sorts of short ends. Owing to the high price of steel, we decided to try oxy-acetylene welding to utilize these ends on mild steel shanks. We prepared them for welding, as at B Fig. 44, and have turned out lathe,

shaper and planer tools that give entire satisfaction. The high-speed points were cut with a hat set and ground to the proper shape, the welding edges being beveled toward the center of about 45 deg. The shank was made in the same way and the weld made with ordinary steel welding rod."

Regarding Presto-O-Lite Co. practice, A. F. Brennan says: "The weld is made in the following manner: Both the machine steel and the high-speed steel are beveled from two sides by grinding, as at C Fig. 44. It is important that this bevel extend clear to the center of the piece and that the angle be a generous one—at least 90 deg. It has been found that a nickel-steel welding rod made of a low-carbon steel containing about 3 per cent nickel gives the best results, and no flux is used.

The weld should be executed just as though both pieces were of machine steel, except that greater care should be taken to insure the penetration clear to the center of the parts being welded. It may be found necessary to "puddle" or "work" the molten metal with the filling rod, as some grades of high-speed steel do not flow readily under the torch.

The tool is finished at the weld to correspond where it is to fit; thus, if space permits reinforcing, the welding rod is filled around the weld; while if a flush surface must be had, it is ground down smooth. I have never welded my points of high-speed steel tips less than about 1½ inches long; but if the material is properly handled I believe that this length could be reduced."

At sketch D Fig. 44 we show a practice of the Root & Vandervoort Engineering Co., East Moline, Ill. The mild steel shank is welded to the high speed steel tip, as the weld line indicates. After the tool is welded, no hammering is done of any kind on it, and all shaping is done by grinding. After rough grinding the tool is hardened in the usual manner, and then after finished grinding it is ready for use.

In sketch Fig. 45 we show a highly skilled job, that of welding a crank shaft. Numerous of these shafts have been welded in one place or another with entire satisfaction. Here, with such work it requires a skillful operator and a person to know how to handle the metal, as well as to retemper it.

A job like at Fig. 45 may be of doubtful value, since it is easy to merely plaster the molten metal on the outside. Now and then a shaft must be welded where the round portion joins the flat crank member. In such cases the round end is prepared, as M of Fig 41, and the entire shaft is lined up on suitable bearings and then clamped down.

By means of small spot welds at the point, it is possible to revolve the shaft on the bearings and see that it is in perfect line up. When this is carefully trued up, the weld is made the same as any other weld on highly tempered steel. Enough metal is built up on the weld, which is later machined down, after which if it is necessary the entire shaft is evenly heated and tempered. Such work is especially popular among automobile shops—but then it is entirely possible for a welder to meet with such work, on his own car, or that of a friend, or the firm's trucks, etc. In fact, welders are often required to repair parts for the firm's cars, and this takes on a very vast variation of parts.

Welding of Alloy Steels

All the varieties of steel thus far considered owe their properties chiefly to the amount of carbon which they contain, and for this reason they are classed as "carbon steels."

Such steel is classed as alloy steel. Among the metals alloyed with steels may be mentioned nickel, manganese, chromium, vanadium, tungsten, and molybdenum. It is highly important that alloy steels be properly heat treated, as in the annealed state they are but little superior to carbon steels. The varieties of alloy steel are so numerous and their properties so varied that it will be possible to refer to them here only in the briefest manner.

Illinois Sheet Metal Men Arranging for Big Convention at Ottawa

Awards to Be Made to Winners of Travelers' Auxiliary Window Display Competition

THE Sheet Metal Contractors' Association of Illinois will hold its annual meeting, in conjunction with the Travelers' Auxiliary, at the Clifton Hotel, Ottawa, Illinois, April 6 and 7, 1927. The hosts will be the Sheet Metal Contractors' Association of Ottawa, Illinois.

In announcing the convention, Fred J. Graeff, Secretary, had the following to say to the members:

"I have been requested to extend to all the Sheet Metal Contractors of Illinois an invitation to attend our convention which will be held at Ottawa, Illinois, on April 6th and 7th.

PASTE this on your 1926 Roster of the Travelers' Auxiliary to the Illinois Sheet Metal Contractors' Association.

FURNACES and FURNACE SUPPLIES

***Carr Supply Company, 414 South Dearborn Street, Chicago.**
Dale V. Carr, Chicago.
DeWitt Van Evera, Chicago.

***International Heater Company, 1933 Wentworth Ave., Chicago.**
F. L. Frazer, Chicago.

SHEET METALS and SHEET METAL SUPPLIES

****Follansbee Brothers, Pittsburgh.**
Wm. R. Read, 964 So. Alabama St., Indianapolis, Ind.

*Inadvertently the above were omitted from our Printed Roster. They are all good friends and have been members of the Traveler's Auxiliary for years.

**New Members.

"We believe that you full realize that there are many things in common, and that by affiliation, because of greater numerical strength, we can be a greater power for good within our industry and can by co-operation accomplish more than is possible by individual effort.

"Below you will find a program of the two days' session. The first night a supper and entertainment will be furnished by the Traveling Men's Auxiliary, which is well worth your time to come to Ottawa, besides the benefits you will receive by attending this convention."

Then in a second letter to the membership the secretary says:

"I am sending you a statement of your dues and an application card for new members. Try and get one, be a Booster, do your bit.

"Did you ever stop to consider the time, energy and money spent by the Travelers Auxiliary to give you a wonderful banquet and entertainment free, absolutely free.

"Stop and think, did you ever think of the time and money spent by your past officers in making your organization a success and without any compensation.

"As your Secretary, I am asking you in the name of your organization to fill out the enclosed return

Address of Welcome by Hon. Geo. V. B. Weeks, Mayor of Ottawa.

Response and Address by G. J. George, President of the Sheet Metal Contractors Association of Illinois.

Proposals for Membership.

11:00 a. m.—Address, J. G. Dingle, Accountant, Ottawa.

Question Box.

Wednesday, April 6th, 1927

2:00 p. m.—Roll Call. Reading of Minutes of the Previous Meeting.

2:30 p. m.—Address, Prof. V. S. Day, Urbana. Subject: Discuss the results of the recent Air Furnace Research.

3:30 p. m.—Motion Picture Films of the Copper Industry.

Question Box.

6:30 p. m.—Banquet and Entertainment at Clifton Hotel.

9:30—Dancing.

Thursday, April 7th, 1927

9:30 a. m.—Address, W. C. Markle, National Secretary.

Question Box.

2:00 p. m.—Reports of Committees.

New and Unfinished Business.
Election. Installation of Officers.
Selection of next Convention City.

The \$100 in cash prizes for the best four window displays, given by the Travelers' Auxiliary to the Sheet Metal Contractors' Association of Illinois, is to be awarded during the convention.

All photographs and descriptions to be entered into the contest must reach the office of the Auxiliary Secretary, Miss Etta Cohn, 620 South Michigan Boulevard, Chicago, not later than March 31, 1927.

Joseph Gardner Moves Shop to New Location in Indianapolis

Joseph Gardner, president of the National Association of Sheet Metal Contractors, is now established in his new location at 147-153 Kentucky avenue, Indianapolis, Indiana, where he has an up-to-date sheet metal shop. His former location was 37, 39 and 41 Kentucky avenue.

card together with a check for your dues.

"Put your back to the wheel and make the boys at Ottawa feel you are going to help make this convention a success, and then they will feel that you have appreciated the work they have done."

Wednesday, April 6th, 1927

8:30 a. m.—Registration and Distribution of Badges at the Clifton Hotel.

9:30 a. m.—Meeting of Board of Directors at K. of C. Auditorium.

10:00 a. m.—Convention called to order by Fred Graeff, Secretary of the Sheet Metal Contractors Association of Illinois.

How the Profit Is Being Squeezed Out of Business

A Discussion of the Cause With a Suggestion for Remedyng the Situation

By CHARLES F. ABBOTT, Institute of Steel Construction

(Continued from Feb. 19 Issue)

Development of Market One Big Job for Association

The California Fruit Growers' Exchange has demonstrated that it isn't necessary for an association to engage in prohibited practices in order to accomplish worth-while results. The Exchange has shown that not only the safest but the *most profitable* activity for an association is the development of its market, the finding of new uses for its products, the utilization and sale of by-products, and entrenching the industry represented by the association so solidly that it is made impervious to competition.

What Associated Advertising Has Done

Hundreds of industries in this country are now organized. The principal activity of many of these associations is advertising, although they are performing several other important missions, which I shall presently mention.

But let us take up the advertising first. Advertising enabled the American Face Brick Association to increase production two and one-half times in four years. It enabled the Automotive Wood Wheel Manufacturers to stop the growing demand for wire and disc wheels. It made it possible for the Greeting Card Association to increase retail sales from \$10,000,000 in 1913 to more than sixty million dollars in 1926. Advertising by the Joint Coffee Trade Committee increased the per capita consumption of coffee from 9.13 pounds in 1919 to 13.15 pounds in 1925, and succeeded in reversing the attitude of thousands of physicians with respect to coffee.

The Associated Tile Manufacturers, Common Brick Manufacturers' Association, Portland

Cement Association, Indiana Limestone Association, The Plate Glass Association, the Paint Manufacturers' Association, the Copper and Brass Association, the Terra Cotta Association, the Slate Manufacturers' Association, are all actively engaged in national advertising.

This is the third article of a series, which AMERICAN ARTISAN presents its readers, embodying an address by Mr. Charles F. Abbott on how competing industries cut in tremendously on the legitimate profits of an established industry by offering a substitute product for the one which the original industry has offered the public. The weapon with which this outside competition can be met is, in the opinion of Mr. Abbott, coöperative advertising. He backs up his belief by citing the instances where industries have got together on coöperative advertising schedules and the favorable results they have attained. Don't fail to read the complete series. If you have mislaid the first two articles, write us and we will be glad to send them to you.

The National Lumber Association has recently appropriated \$5,000,000 to cover a five year campaign.

All of the companies in these industries were at one time competing with themselves, thus cutting down the volume of the industry and making it more difficult for the factors in it to make a profit. Finally, however, these industries woke up to the fact that it was outside industries that were encroaching on their fields. With this realization they formed associations, went

after their real competition and after a year or two showed not only big increases in sales, but what is more to the point, big increases in the profits of the members.

Dependability of American Steel a Point Emphasized

No better illustration of the usefulness of an association can be offered than its leadership in protecting an industry against any practice that might impair public confidence in its product.

The importation of foreign steel, simply to save a few dollars in the first or initial cost, is a point in question. It is not because of its foreign origin that the use of imported steel should be opposed. There are conditions which surround its use that are well worth considering.

American structural steel is made to conform to certain specifications that are universally used in this country. They prescribe its chemical composition and mechanical properties which are determined by standard physical tests. The uniform quality and dependability of the American product is an important factor in the building industry.

Foreign steel is made to conform to foreign standards that are not acceptable to us. When manufacturers abroad do attempt to produce a steel conforming to our standards it is a special and unusual undertaking which naturally results in a certain lack of uniformity in quality, and resultant undependability in service. When this condition confronts us, the source of supply is too distant to rectify quickly the errors.

It is admitted that a lower price offers certain apparent inducements for the use of foreign steel. These inducements, however, are not valid

or sound for several reasons other than the element of quality. The use of foreign steel in considerable volume will naturally affect American production in the form of a restricted output. A disorganized and disturbed market will follow. The inevitable result will be an undependable supply of domestic steel as to quantity.

Speed Depends on Service and Supply

The speed with which the American building industry operates is based upon a dependable service of supply. The foreign sources cannot, for obvious reasons, render this service either as to quality or delivery. If the building industry, having become dependent on foreign steel, should be confronted with a restricted supply insufficient for its needs, the industry would have to turn to the American mills. The price of American steel would then immediately advance and deliveries become uncertain. This condition would entail loss to every branch of the building industry.

The unprecedented volume of building construction during the past few years has been the result of two things, the shortage of buildings of every kind and the stability of the material and labor market. To foolishly disturb these conditions, especially as regards a basic material such as steel, would immediately react, as stated, on the entire building industry. This would entail much larger losses to all producers of materials of construction, and to labor, than the present really paltry difference between the cost of foreign and domestic steel.

The fabricators, who are distributors or users of steel, should carefully consider all of the conditions imposed by the use of foreign material and should promote the use of the product of the American mills, thereby maintaining the present stabilized conditions.

Wool and Cotton Industries Find Need for Association

The most recent converts to the association idea are the wool and cotton industries. For years con-

ceded to be the most efficient in matters pertaining to production, they have finally been forced to devise methods for stabilizing their industries. They have come to a timely recognition that conditions must be dealt with by concerted co-operative action.

Their associations are to undertake a program to increase consumption, which will include advertising, sales promotion, the development of new uses, better merchandising methods, and a reasonable and careful stabilization in production that will benefit both the consumer and the producer.

Both have suffered greatly from the lack of co-operation which in turn produces, in times like the present, fatal price disorganization and cut-throat competition.

The success of the cotton movement is assured by the recent appointment of Walker D. Hines, former director general of the United States railroads during the war, to the presidency of the Cotton Textile Institute.

It may not be amiss to refer here to another form of outside competition that has hurt the textile manufacturers. To a certain extent all of the textile manufacturers have been hurt by the intense competition between the five great fibers—cotton, wool, silk, linen, rayon. The greatest outside competition, however, of those in this field is style. Style has so greatly cut down the cloth that it takes to clothe a woman that the yardage required is now only one-sixth of what it was twenty-five years ago. This means that if it were not for the larger wardrobe of the average woman today, and the increased population, the market for textiles, as far as women's apparel is concerned, would be only one-sixth what is used to be.

This is outside competition of a most malevolent character. Fortunately, however, it is a type of competition that can be made to yield to co-operative effort.

For one thing, the textile manufacturers, particularly those in the cotton end of it, should begin

realizing that apparel is not their only market. Numerous other uses for cotton can be developed.

Value of Co-operative Advertising by Competitors

Professor Hugh E. Agnew has written a book entitled "Co-operative Advertising by Competitors" which gives dozens of examples of how industries have united and found constructive methods to deal with this growing menace of outside competition. I want to make it clear that fighting an outside industry does not mean engaging in destructive tactics.

I have shown in the incidents quoted how this can be done. The point will be made clearer in a few more incidents which I am going to cite. The Oak Flooring Manufacturers' Association had as its outside competition the makers of rival flooring materials. The association has been advertising for seventeen years. Since this campaign started in 1909, the use of oak flooring has increased more than 800 per cent.

Kraut packers had as their outside competition the fact that the eating of kraut was regarded as too common a pleasure for a refined person. No matter how well they liked kraut, people did not dare, for the sake of the neighbors, let its fragrance come from their kitchens. The National Kraut Packers' Association has changed this foolish sentiment. The sale of kraut has greatly increased and the once plebeian sauer kraut is now offered for sale in the best hotels and dining cars.

The "Say It With Flowers" campaign has increased the sale of cut-flowers 400 per cent. It has made flowers a twelve-month item of merchandise.

Encouraged by the results of its co-operation with union labor, the Union-Made Garment Manufacturers' Association of America has authorized the expenditure of \$100,000 in 1927 for advertising to combat competing merchandise turned out in prisons. Many other similar instances could be named.

(To be continued.)

Texans to Show Contractors "Wild and Woolly" Side of Texas

Everything Being Done to Show That Texans Are "Up and Doing"

THE Dallas, Texas, Sheet Metal Contractors' Association and the Dallas Ladies' Auxiliary held a joint meeting in the Adolphus Hotel, Dallas, Thursday evening, March 10, to complete arrangements for the national convention in April.

Members of the Dallas Sheet Metal Contractors' Association and Ladies' Auxiliary held a joint meeting Thursday evening, March 10, to discuss plans for completing arrangements for the convention, at the Adolphus Hotel.

After dinner, definite things were decided upon for the program. Harry Stanyer, general chairman of the convention, presided. A tentative program was read and sent to W. C. Markle, national secretary, for approval.

Mrs. T. Owen, chairman of the Ladies Auxiliary, announced that plans were being made for entertainment for the women, and that letters would be mailed to the wife of each national member urging her to attend the convention.

W. A. Richardson told of the rodeo and barbecue which would be held on Thursday during the week of the convention. Real western people will put the show on and the "wild and wooly" side of Texas will be shown to visitors.

It was decided to have a suite of rooms in the hotel for women's headquarters. At any time visiting ladies will be conducted to special places which they wish to see.

V. H. Parks, of the Meyer Furnace Supply Company of Peoria, was the guest of honor.

"All present were full of pep and enthusiasm, with but one thought—to put the convention across in a bigger and better way than it has ever been done before. Texas cannot fail seems to be the feeling of all of our members," said a message from the secretary.

"Get this message to the national members for us. We're going to give them something worth taking back with them! All we want them to do is to come."

Sheet Steel Trade Extension Issues Calender Promoting Steel Garage

The Sheet Steel Trade Extension Committee, with offices in the Oliver building, Pittsburgh, have recently prepared a very attractive calender headed "Beauty — Permanence — Safety."

The message on the calender calls attention to the tests that were made at Washington, D. C., last June to determine just how fire proof the sheet steel garage is, including illustrations of the garage that was fired for the purpose of making the tests.

There are also included two architect's drawings of sheet steel garages made up in attractive designs, showing the possibilities for obtaining safety and permanence without sacrificing beauty when sheet steel is used.

This calender is only one of the many ways in which the Sheet Steel Trade Extension Committee is ferreting out new uses for sheet steel by calling attention to the permanence of the metal and to the possibilities in unique designs not thought possible until now.

Here's Important Court Decision Recently Rendered

Court Enjoins Unions from Combining to Injure Company's Business

A COURT decision of effect important to fabricators of sheet steel was recently handed down in the District Court of the United States for the Western District of Pennsylvania. The case was that of the Columbus Heating & Ventilating Co. vs. Pittsburgh Building Trades Council, et al., No. 1780 in Equity.

The essential facts are:

The Columbus Heating and Ventilating Company, whose main business is furnishing and installing heating and ventilating equipment in public buildings in Ohio, Indiana, Kentucky, West Virginia and Pennsylvania, operates their factory in Columbus, Ohio, as an open shop.

The factory is practically non-Union, while the installation forces are more or less composed of members of the Sheet Metal Workers' Union. During the last year, efforts have been made by the Sheet Metal Workers' International to unionize the factory at Columbus and a special organizer was assigned the task of accomplishing this result. His efforts in this direction showed on progress and he, therefore, called upon local Unions in various cities in which employees of the Columbus Company were members, for assistance.

At a meeting of the Sheet Metal Workers' International at the American Federation of Labor Convention in Detroit, it was decided to concentrate upon the Columbus Company, and all local business agents should be notified to call

off their men from working on jobs promoted by the Columbus Heating and Ventilating Company. As a result of this action, the Sheet Metal Workers of the Dayton, Ohio, local and of the Pittsburgh Local, were called from work during the month of November.

On November 18th, the members of Local No. 12 Pittsburgh, Pa., who were employed by the Columbus Heating and Ventilating Company on a new public school building in Pittsburgh, were ordered to cease work. About the same time, the members of the Dayton, Ohio, Local were also ordered to cease work. However, the Columbus Heating and Ventilating Company continued its work at Dayton, and, as a consequence, the Dayton Building Trades Council called a general strike of all crafts. In Pittsburgh the work of the Columbus Heating and Ventilating Company was stopped and no attempt was made to continue same and, therefore, no general strike was called.

On December 5th, a preliminary restraining order was granted by the United States District Court, and after issuance of same, the Columbus Company continued to do their work in Pittsburgh and no general strike followed. A hearing was held before Judge Thompson of the District Court on January 6th, to determine whether or not a preliminary injunction should be allowed the Columbus Company in the Pittsburgh district, and on February 1st, Judge Thompson handed down his opinion which extended to the Columbus Company the injunction they asked.

The opinion as handed down by the Court said in substance that:

The action of the local Unions was threatening the calling of a sympathetic strike and secondary boycott and that such constituted a combination and conspiracy to restrain interstate commerce which could be restrained by injunction. The Court further said that the Supreme Court held that the Act of Congress assumes the normal objects of Labor Unions are legitimate, but contains nothing to exempt them from accountability when they depart from objects that are normal and legitimate and engage in a combination or conspiracy in restraint of trade. The Clayton Act refers to cases between employer and employee involving or growing out of a dispute concerning the terms or conditions of employment; that the words "employers and employees" are not used in the general sense so as to treat all the members of a labor organization as parties of a dispute which affects only a few which would thereby legalize sympathetic strikes.

The Court enjoined the Unions from combining and conspiring to injure the Columbus Company's business or to interfere with the execution of its con-

tracts; from causing or conducting strikes in their respective lines of activity or any other sympathetic strikes or secondary boycott; from interfering with any of the Columbus Company's employees or coercing or threatening them to leave the employment of the Columbus Company, and from issuing orders or requests to any other crafts working on the buildings on which the Columbus Company was working, to cease work on these buildings.

In its broad application, the opinion establishes the following: That where there is no controversy between the employer and employee, the labor unions cannot, without violating the law, call sympathetic strikes or institute secondary boycotts, such as placing parties upon the unfair lists and the like, or take action to interfere with the operations of any employer.

the Holzer Sheet Metal Works and the American Heating and Plumbing Company, New Orleans, and depicts the Waterbury seamless warm air furnace and the Williams Oil-O-Matic fuel oil burner.

For the sheet metal end of the float, Holzer Sheet Metal Works had erected a sheet metal garage, which is shown mounted on the truck.

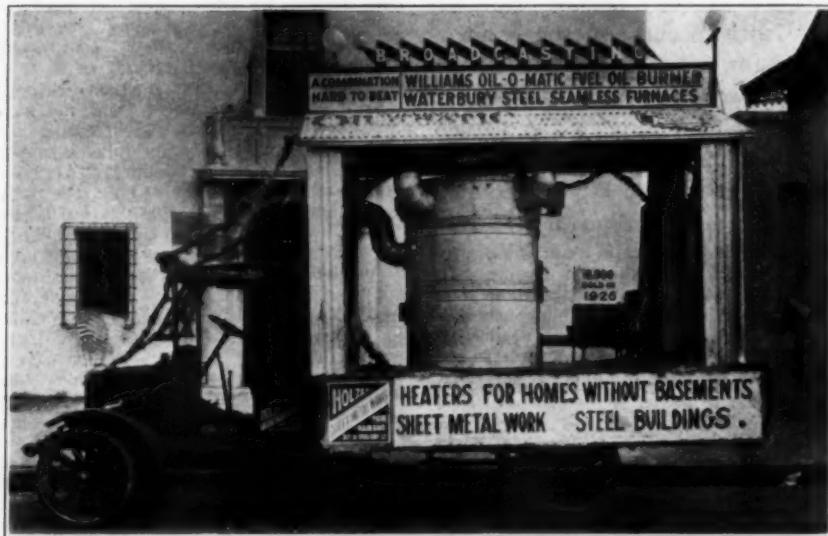
As the truck was driven along the streets in the parade, some 10,000 toy balloons were distributed from it, each one of these bearing the name of the Holzer Sheet Metal Works, the Waterbury Seamless furnace, The American Heating and Plumbing Company and the Williams Oil-O-Matic oil burner.

Holzer Sheet Metal Works Enters New Orleans Mardi Gras Parade

Gets Sheet Metal Warm Air Heating Before Public During Popular Festival

THE annual Mardi Gras of New Orleans, Louisiana, has attained wide fame. People from all over the world go to New Orleans for the annual Mardi Gras. Stories are

But it is an ill wind that blows no one good. And the annual parade held in connection with the Mardi Gras gives the wide awake sheet metal and warm air heating men an



Float of Holtzer Sheet Metal Works, New Orleans, La., Entered in the Mardi Gras Parade. The American Heating and Plumbing Company Also Participated in This Float

current of the hotel rooms, which ordinarily rent at from \$3 to \$5 per day, being automatically advanced to \$25 and more during this great festive occasion.

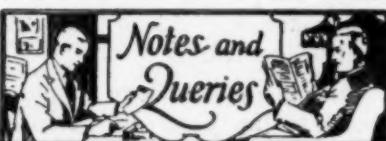
opportunity to get themselves before the public, and one of which they take full advantage, as the accompanying illustration reveals.

The float shown was arranged by

William R. Neal Entering Furnace Business—Wants Catalogs

William R. Neal, proprietor of the Sheet Metal and Welding Works, 630 Palm Street, Jacksonville, Florida, writes to AMERICAN ARTISAN as follows:

"Please announce that we have not as yet adopted any particular make of furnace, registers or wood faces. We are just entering that line of work and as such supplies as these will play an important part in making up our estimates, we would greatly appreciate receiving catalogs and price lists showing location of available supplies from manufacturers of furnaces, registers, wood faces and grills."



Radiator Shields.
From Anderson Furnace and Repair Company, Galesburg, Illinois.

Please give us names of firms that manufacture radiator shields.

Ans.—Hall-Neal Company, Indianapolis, Indiana; Thomas and Armstrong, London, Ohio; Tuttle and Bailey Manufacturing Company, 1125 West 37th Street, Chicago, Illinois; Tayco Register Shield Company, Menasha, Wisconsin, and Hart and Cooley Company, 73 East Lake Street, Chicago, Illinois.

The Editor's Page

Greater Business Awaits Sheet Metal Man

MARKET PREPARATION is being effected by the persistence of the advertising of sheet metal. Evidences of better public understanding and appreciation of sheet metal as a material of exceptional fundamental merit, crop up constantly on every hand. Industry is in a more receptive mood toward sheet metal than ever before.

This, therefore, is the time for the manufacturer of anything made wholly or partly of sheet metal, or the dispenser of sheet metal service, to redouble his selling efforts and thus secure the advantage of the growing widespread tendency to prefer sheet metal in all forms from roofing to rudders. Selling effort, both printed and personal, in behalf of anything fundamentally meritorious made of sheet metal or functioning through sheet metal, meets more intelligent and sympathetic reception now than ever before.

Be not reluctant, therefore, to approach new doors and cross new thresholds. New business awaits. And in these days of keener competition and declining prices, new business is much to be striven for. Industry will extend a cordial welcome because industry, today, understands and appreciates sheet metal as never before.

Discharging a Responsibility Toward Employees

JACK STOWELL, Aurora, Illinois, has some very excellent ideas about the proper conduct of a sheet metal contracting and warm air furnace installation business. One of these is that he believes in giving his employees every opportunity to become acquainted with the industry of which they are a part.

One day last week he took two of them to Urbana, Illinois, and let them see the Research Residence. They had the whole object of research work explained to them while there by one of the research professors and came away with a fund of knowledge that cannot fail to stand them in good stead in their work.

Following their trip to Urbana, they visited the plant of the Rudy Furnace Company, Dowagiac, Michigan, where they saw the operations of the manufacture of warm air furnaces from beginning to end, with the result that these men are going back to their work with a far better conception of what it's all about than they had before the trip.

It must be said to Jack's credit and to the credit of all the other contractors who maintain a similar policy toward their employees that these men are the builders of the industry. They realize that they, as employers, have certain responsibilities with respect to their employees which extend considerably beyond the handing

out of a stipulated amount in a pay envelope every Saturday night.

They realize that in order to become a good workman and increase in value to the firm, the employee must be given an opportunity to increase his knowledge of the industry. If he is told by his employer that he must put in a certain size of pipe, he must be told why that particular size of pipe is necessary and the authority.

Is there any better way to show these men the authority for the Standard Furnace Code than to take them to Urbana and let them see for themselves what is being done for the industry? I am sure that if there is, Jack and a lot more who employ similar progressive methods would like to learn about it.

Is There a Saturation Point in Warm Air Furnaces?

YOU MAY think competition in the warm air furnace business is keen, but you haven't seen anything yet. Here's the way the market for furnaces stacks up today:

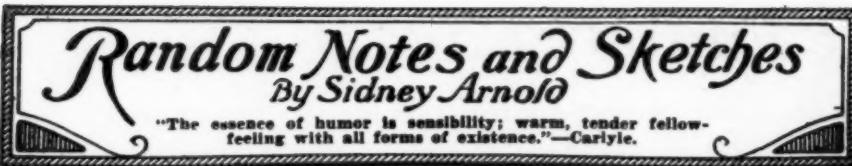
According to the Bulletin of the National Warm Air Heating and Ventilating Association the replacement market alone calls for 650,000 warm air furnaces every year. Government figures show that there are only 500,000 furnaces being manufactured annually.

If the potential replacement market is 650,000 furnaces and there are only being manufactured 500,000, there is a deficit of 150,000 for replacements alone, without mentioning the new construction requirements.

Under the circumstances no furnace installer can rightfully say that competition in his town or his neighborhood is keen. If he is having difficulty in getting the business, there must be something else wrong with his methods of doing business. Either he is not doing the kind of work that is building good will for him, or he is not on his toes to create the business or develop the latent potentialities of his community.

Let me ask, how long would such a business man last were he selling pianos, automobiles or victrolas? Certainly the saturation point in furnaces has not been as nearly reached as it has with automobiles, pianos and other similar products which have been on the market for a long time and which are facing the competition of other products.

No, there is still plenty of furnace business to be had by the furnace man who is willing to go out and dig around for it. If you don't think so, make a survey of your town and find out how many possible replacement and new installations there are to be had. Then plan your campaign to capture them. It will probably mean work for you, but you will be surprised at the number of good jobs there are sitting right under your eye.



I learned the other day in Grand Rapids that my old friend, Charles E. "Doc" Weatherly, 115 Earldon Street, S. E., Grand Rapids, Michigan, is in a very poor state of health. Mr. Weatherly has been confined to his bed during most of the winter and I am sorry to say that those close to him hold out little hope for his immediate recovery. Mr. Weatherly has been actively engaged in the warm air heating industry in Grand Rapids for a great many years. He was recently made an honorary member of the Michigan Sheet Metal and Roofing Association. I think he would appreciate it very much indeed if the men in Michigan and those in other states who know him would drop him a line of encouragement.

* * *

Just before the sightseeing bus pulled out for the tour of the city, two countrymen, Bill Busch and Harry Rhodes, Grand Rapids, climbed aboard and took the back seat. As is customary on such trips, the guide took a position at the front of the bus to direct the attention of the party to the various points of interest. After they had ridden quite a way the guide spoke through a megaphone.

"On the left we have the Vanderbilt mansion."

Bill, wishing to display his knowledge upon the subject matter spoke up: "W. K. or Cornelius?"

"W. K.," replied the guide, "and who in the hell's running this party, you or me?"

They rode on in silence until the guide arose the second time.

"On the right is the Astor home."

Bill spoke up again: "Vincent?" he inquired.

"Naw,—John Jacob, and that's enough questions from you, bo see?"

The bus rolled on down the avenue and it was a half hour before

the guide yelled out for the third time:

"On the left is Christ Church."

Harry leaned over to Bill and whispered, "You got him this time, Bill."

* * *

I had a very pleasant visit on Tuesday of this week with James Charles Allan, Rockford, Illinois, International Heater Company representative, who came in to see me. Mr. Allan is one of the most enthusiastic Standard Furnace Code advocates that I have had the pleasure of meeting in a long time. Speaking of the Code brought to his mind Harry Hussie and an incident which occurred while the two were together. It seems an old woman had a cook stove whose oven would not work properly. She called James Charles and Harry into the house to inspect the oven. After they had both agreed that the oven was hot enough to bake almost anything, she put a freshly made custard pie into it and closed the door. After allowing it to bake for some minutes she opened the door and said, "see it's beginning to get brown on top, but the bottom will not bake. What shall I do?" With a merry twinkle in his eye, Harry Hussie suggested that she turn the pie over.

* * *

Here's a favorite of Frank Daly:

A farmer hearing suspicious sounds in his hen-coop, hurriedly seized a shotgun and proceeded to investigate.

"Who's there?" he demanded as he drew near the coop.

A long silence.

Finally a quavering voice, with unmistakable African accent, said, "Only us chickens."

* * *

To avoid chartering a special car to ship 200 pounds of limburger cheese, Al Bersbach packed it in a rough oblong box and checked it as a corpse. At the first stop he went

ahead to the baggage car to see that there was no trouble. He stood by the box in a disconsolate attitude and shaded his eyes with his hand. The baggage man was sympathetic. "A relative?" he asked.

"Yes, it's my brother."

"Well, you have one consolation; he's dead all right."

* * *

Roy Harrison, Rudy Furnace representative in Chicago, being shown 'round one of the numerous Michigan lakes, asked his guide, A. F. Frazee, Secretary of Rudy Furnace Co., how deep it was.

"Well, sir," was the reply, "we don't know the actual depth, but last year a young Australian came here to bathe, took his clothes off and dived in, and we never saw him again."

"And did you never hear from him?"

"Oh, yes, we had a cablegram from Australia asking us to send his clothes on." Now laugh, Roy; that's one of many things you do well.

* * *

"As we journey thro' life
Let us live by the way."

The Sage, an elderly friend with whom we counsel often, recently repeated the lines printed above. He told us of his life, his dreams, and his accomplishments.

And out of all his memories came one thought,—that to live well, we all must live "by the way."

He told us that men who have succeeded and who are classed as leaders, treated their business associates honestly, toiled hard and long, enjoyed life's pleasures thoroughly,—modestly doing all these noteworthy things day by day.

"Leaders of men," said the Sage, "learned from their skillful associates for they realized that he who teaches himself has a fool for a master. They gained their knowledge from their everyday tasks, accomplished under the guidance of older, more experienced men."

Let us do our tasks honestly and accurately, develop sincere and well-founded principles of business, and as we journey through life, live well.—*International News*.

Langenberg Evolves Warm Air Installation Test Chart

Finds Chart of Excellent Use in Locating Trouble in Installations

THE Langenberg Manufacturing Company, St. Louis, Missouri, has recently compiled a test chart. The purpose of this test chart is to provide a record of tests made on warm air furnace installations to locate trouble. This chart, when properly filled out, shows just what was done during the test and provides a basis for making out a statement of charges to the home owner.

"There are always a number of complaints made when the bill be-

comes due," said E. B. Langenberg, "and by running a test on the job we are able to determine whether the complaint is a legitimate one or not. We have made a number of tests already which are showing up different sources of trouble. Such items as improper firing and the non-regulation of dampers."

Chart "A" itemizes the conditions and only one copy is needed on a job. Chart "B" records the readings and shows the relation be-

tween room temperature and register temperatures and requires a sheet for each reading. It has been found that a four-hour test is about the maximum necessary, as a two or three-hour reading every thirty minutes develops inequality in distribution and suggests a remedy immediately.

This system has been copyrighted by the Langenberg Manufacturing Company and is being reproduced herewith with full permission by that company.

TEST CHART "A"

St. Louis, Mo.
 Test No. Sheet No. Date. Address.
 Name.
 1. Condition of fire on arrival.
 2. Condition of heating surfaces.
 3. Condition of dampers W. A. C. A. S. P. Check.
 Draft Door. Feed Door Slide.
 4. Is it apparent that plant is kept in clean condition?
 5. Condition of flue. Size. Height. Obstructions.
 Cleanout. Tightness. Miscellaneous.
 Is test necessary? Smoke. Gauge.
 Are there any other connections to flue? Other defects?
 Are there indications that draft is not sufficient?
 6. Are firing instructions followed? Is firing chart on job?
 Does operator show fair knowledge of operation? Who.
 7. Kind of fuel used. Clean.
 8. Condition of register valves. Is heat controlled by register valves or dampers in pipe?
 9. Are all cold airs active? Is register flow lively?
 10. Where is cold air taken from?
 11. Is plant equipped with automatic control?
 12. Condition of cellar doors and windows. 1st floor.
 2nd floor. Other bad conditions.
 13. What is the specific nature of the complaint?
 Does this occur constantly or at varying wind pressures and from what direction?
 What is attitude of owner? Is bill paid?
 14. State what you think is cause of complaint.
 15. Suggest remedy.
 Test made by. Assisted by.

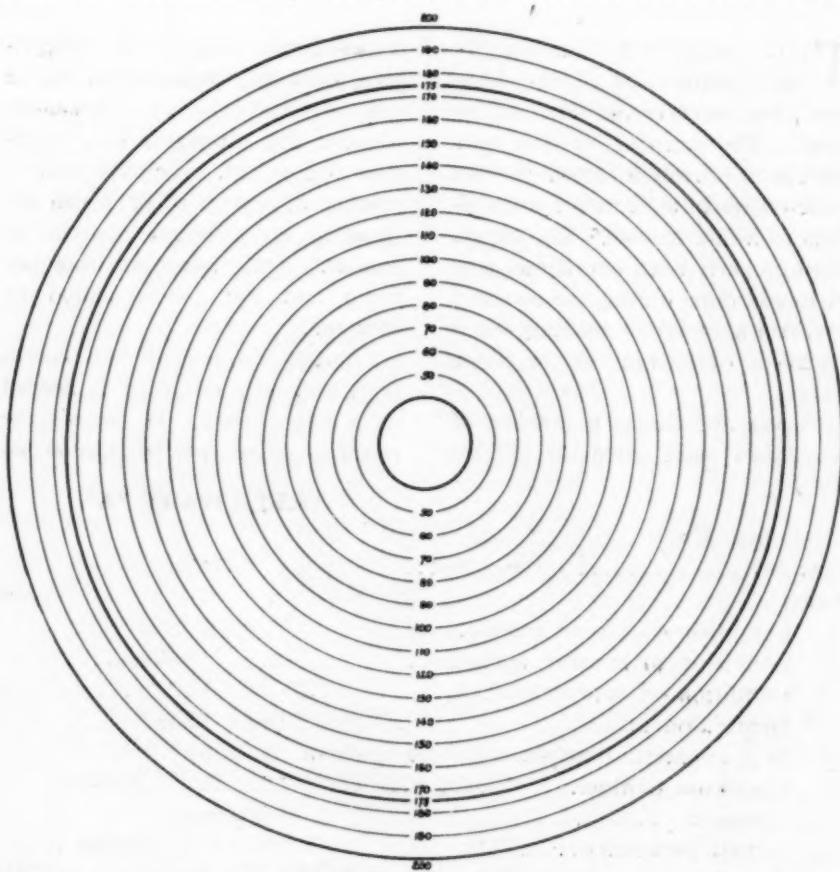
TEST CHART "B"

Test No. Sheet No. Date.
 1. Orient this sheet with the furnace layout. Top of sheet points north.
 2. Draw lines from center of inner circle to outer rim and name pipe.
 3. Show location of feed door on outer circle. Give size of furnace.

4. Draw arrows pointing to the center of the small inner circle, showing cold air openings in casing.
5. Use separate sheet for each 30 minute reading and make note of all changes in dampers and control.
6. Outdoor temp. Wind m. p. h. Direction Sun
- Aver. room temp. Aver. reg. temp.
- Condition of control. Drafts. C. A. W. A. Regs.
- Condition of fire and combustion.
- Time of reading. Read by

Test Chart Instructions

1. On arriving at house, one operator goes to basement and fills out chart sheet A.
2. Operator No. 2 starts making readings immediately of room and register temperatures.
3. Thermometers should be placed in center of room with bulb five feet above floor.
4. Register temperatures should be taken with bulb of thermometer located in throat of register box. Readings may be taken after thermometer has been placed in position for at least two minutes.
5. As soon as register temperature has been taken the room temperature should also be recorded on the disc for that purpose.
6. A sequence of rooms should be worked out in logical order and this order should be followed at each reading.
7. Readings are to be taken every thirty minutes throughout the test, and should be made over a period of not less than three hours.
8. Wind velocity should be estimated and direction of wind noted on chart.
9. As soon as first readings are completed Operator No. 1 in basement should be instructed to get fire in proper condition, all W. A. pipe dampers, C. A. dampers opened wide.
10. Firing period shall be determined by the kind of fuel in use and on the following basis: Soft coal, four hours; hard coal, six hours; coke, four hours. The firing period is, of course, dependent on the diameter and depth of the pot, and the above schedules contemplate a 24-inch pot or larger.
11. After fire is brought to proper condition the above schedule should be followed for at least two hours and the readings taken during those hours will determine whether on this schedule enough



Sheet for Use with Test Chart "B" in the Langenberg Warm Air Furnace Installation Test Chart

heat will be supplied to take care of the losses.

12. At the end of the two-hour period, should some rooms show an excess in temperature over others, then the dampers in the W. A. pipes should be regulated to equalize the flow of air.

13. Operator No. 1 should record all observations made in the basement.

14. Firing chart should be explained to owner and instruction given on proper firing.

As we go to press a letter arrived from Klentzer & Klentzer, Fowler, Indiana, containing a plan showing how they disposed of the 2-flat immovable air problem. This will be published next week.

American Artisan Brings Avalanche of Information to Gen. Sheet Metal Works

The General Sheet Metal Works, 1526-28 Seventh Street, Rockford, Illinois, have this to say about AMERICAN ARTISAN after we had published an announcement of their entry into the business:

To AMERICAN ARTISAN:

Thank you for the announcement on page 121 of your February 19th issue. The response to this announcement surprised us with the avalanche of replies and they are still coming. Your announcement gave us more information about all phases of the sheet metal and warm air furnace business than we would have thought of ourselves in months.

Klentzer & Klentzer Job Will Require 920 Inches Warm Air

Furnace Should Have Capacity of 1000 or 1100 Inches to Work Properly

By W. C. KOENNEMAN

TO heat the Klentzer & Klentzer, Fowler, Indiana, job at 10 degrees below zero, it will require 920 inches of warm air. The heater should have a capacity of 1,000 to 1,100 inches. The square foot area of the grate will depend

by 5 windows, and will, therefore, require 89 inches, making a total requirement for these two rooms of 223 square inches of warm air.

The stack in the wall should not be less than $3\frac{1}{2}$ by 14 inches or 49 inches, but on account of the rise

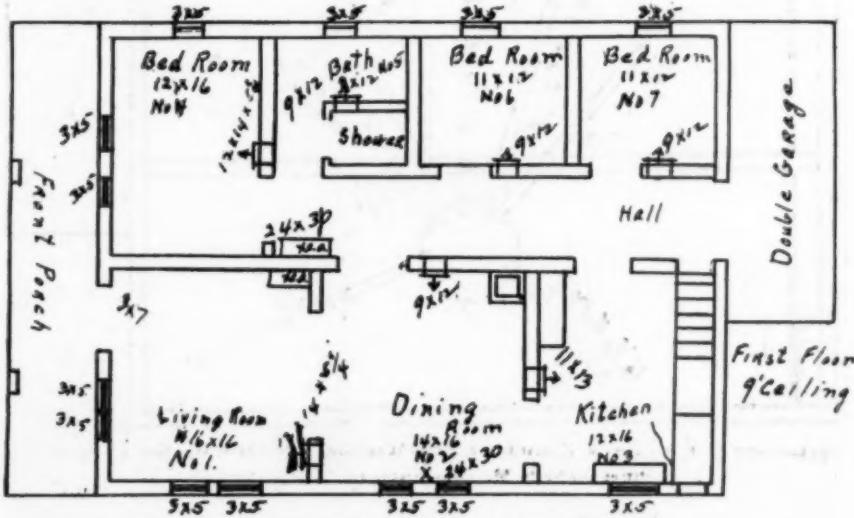
two rooms under the circumstances.

Rooms 4 and 11 can be taken care of with a 14-inch pipe, because these are bed rooms. I have merely listed each room's requirements as it figured out, in an effort to point out what, in my opinion, is the reason the job fails to heat.

The real reason why your air does not seem to be moving is that the throat openings in your boots and boxes are not large enough to allow all of the heat produced by the furnace to pass through. Naturally when the heat generated cannot get out of the warm air pipes, it will start to back up through the cold air ducts. The more rapidly you can relieve the furnace of the heat which it produces, the more quickly your air will move in the rooms. As soon as there is air motion in the system your building is bound to be heated. All heat depends upon circulation.

Air infiltration, too, must be taken into consideration at the time the installation is made.

In checking over this installation I find a few things which, in my opinion, are wrong. The throat



First Floor of Klentzer & Klentzer 2-Flat Building, Showing How Mr. Koenneman Would Rearrange the Job

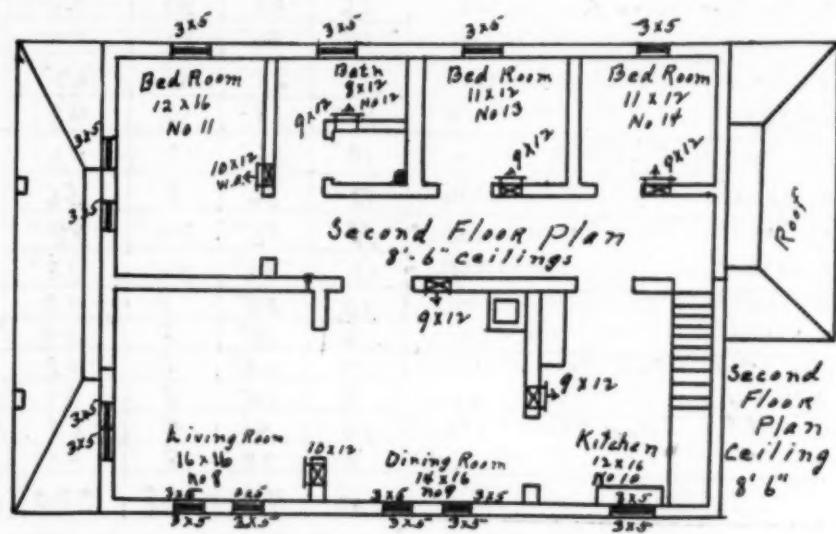
upon the depth of the fire pot. The furnace should have at least four square feet of grate area.

The accompanying layouts show how I should have figured this job. You will notice that the rooms have been numbered for the sake of convenience in referring to them. For example, rooms Nos. 1 and 8 are living rooms, one on the first floor, the other on the second. Both are corner rooms, with two walls exposed.

No ceiling heights are given, so I have assumed that this is 9 feet, with four 3 by 5-foot windows and one 3 by 7-foot door. To heat this room at 10 degrees below zero will require 134 square inches.

The living room on the second floor is of the same size as that on the first floor. It has an $8\frac{1}{2}$ -foot ceiling, two exposed walls, four 3

this would give sufficient heat for the room on the second floor, and you see that a 14-inch pipe could not furnish sufficient heat for the



Second Floor, Showing Still More Changes to the Heating Layout as Suggested by Mr. Koenneman

openings in all of the register heads are too small in the runs for Nos. 1 and 8, 4 and 11, 3 and 10, and 5 and 12. Your cold air faces are only large enough for a 20-inch pipe; therefore, I would suggest a cold air face of not less than 24 by 30-inch area.

A cold air face that is placed in a corner as a rule has only two working sides, and I should suggest moving them out more toward the center of the wall.

There should be added one 14-inch cold air duct to this job and you would not have any too much cold air returning to the furnace then.

There are five 5 by 15-inch cold air vents on the second floor. If these are not working the chances are that the studding is closed at the attic. These cold airs vent through the attic and cannot, therefore, be considered as discharging their air through the furnace casing.

Getting back to the warm air registers for room No. 1. This register is an 11 by 13, equaling 143 by 65, equals 92.95 inches free air opening. The throat opening of the register head is 6 $\frac{1}{8}$ by 13 $\frac{1}{2}$, which equals 86 inches, and it is supplied with a 12-inch pipe, equaling 113 inches. This 12-inch pipe is supposed to heat two rooms of equal size, when the fact is that it

isn't efficient enough for room No. 1 alone.

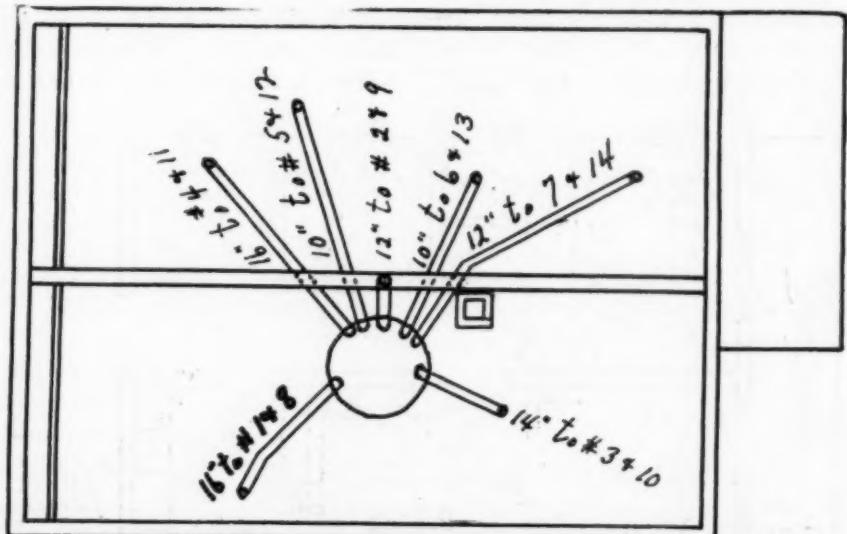
It is not my intention to tell anyone how to install this job, but am only giving my personal opinion and reasons why this job does not work.

The two 16-inch runs that I have mentioned are somewhat irregular I know, but they do show just how much short the 12-inch duct comes of furnishing enough heat for the rooms it is supposed to heat.

go into it more thoroughly if more details are given. It is very important that the furnace have a capacity sufficient to handle the warm air and cold air requirements of the job.

Ros Strong Writes Non-Technical Articles for Complete Home Show Magazine

The home buying public is being treated to the greatest amount of information on warm air heating at



Basement of Klenzter & Klenzter 2-Flat Heating Job Showing the Sizes of the Pipes Which Mr. Koenneman Would Put in

I sincerely hope that I have thrown some light on the difficulty. Any point that I have not made entirely clear, I shall be very glad to

the present time that they have ever had in all time past. Magazines and newspapers are giving warm air heating an increasing amount of

Cost Contents	Sq. Ft. Ex. Wall	49 Ft. Glass	Sq. Inch Win. Required	Total	Pipe Size	Sq. In. Area	Extension to 2nd Fl.
#1 First Floor Living Room 16 x 16	26	65	43	134	16"	201	
#8 2nd Floor " " 16 x 16	16	41	32	89	223	16"	
#2 First Floor Dining R. 14 x 16	23	28	16	67	115	12"	113
#9 2nd " " 14 x 16	14	18	16	48			"
#3 First Fl. Kitchen 12 x 16	19	56	17	92	151	14"	154
#10 2nd " " 12 x 16	12	36	8	56			"
#4 1st Fl. Bed Room 12 x 16	19	56	24	99	171	16"	201
#11 2nd " " 12 x 16	12	36	24	72			less 10% For Sleeping
#5 1st Fl. Bath 8 x 12	10	25	8	43	72	10"	78
#12 2nd " " 8 x 12	6	15	8	29			"
#6 1st Fl. Bed Room 11 x 12	14	25	8	47	78	10"	78
#13 2nd " " 11 x 12	8	15	8	31			"
#7 1st Fl. Bed Room 11 x 12	14	46	8	68	113	12"	113
#14 2nd " " 11 x 12	8	29	8	45			"
Total	201	491	328	920"	923	7828	938

Heating Requirements of the Klenzter & Klenzter 2-Flat Warm Air Heating Job as Determined by Mr. Koenneman Using the Standard Furnace Code

space as time goes on.

The latest evidence of this fact to come to our attention is the Complete Home Show Magazine, published annually by the Builders & Trades Exchange at Grand Rapids, Michigan.

The 1927 issue of this most interesting little publication carries a 2-page article on "Warm Air Furnaces Under National Committee," written by R. B. Strong, chief heating engineer of the Homer Furnace Company, Coldwater, Michigan.

This article gives a short historical sketch of warm air heating in the pipe and pipeless furnace, telling of the institution and development of the Standard Furnace Code and its purposes without going into the technical details of the research work that is back of the code. It is written for home owner or prospective home owner consumption and as such does the job of interesting its readers in the warm air heating system very well. Mr. Strong is to be commended.



The Honor Cup Suitably Engraved

recognition. The accompanying illustration of the Honor cup recently presented to the Gilt Edge organization testifies to the sincerity of their intentions.

Court of Neptune Pageant Loving Cup Goes to R. J. Schwab & Sons

Gilt Edge Toboggan Float Carries Off Honors—Parade Took 3 Hours to Pass Reviewing Stand

R. J. SCHWAB & SONS COMPANY, Milwaukee, Wisconsin, makers of Gilt Edge warm air furnaces, are awarded the silver honor cup for the Milwaukee Neptune Pageant for 1926.

The city of Milwaukee recently

avenue to the reviewing Court of King Neptune, located on the lake front.

In the line of march was the Gilt Edge float. A toboggan apparently sliding along on a block of snow, supporting a Gilt Edge furnace, and



Float Which Won the Silver Honor Cup for the R. J. Schwab & Sons Company, in Milwaukee, Wisconsin, in the Court of Neptune Pageant

devoted one solid week to celebrating the Court of Neptune Pageant.

One of the biggest features of the week's festivities was the mammoth parade of historical, industrial and civic floats interspersed with numerous bands.

For three hours thousands of Milwaukeeans and visitors stood in line watching the living pages of Milwaukee's book of progress slowly wending their way down Wisconsin

three pretty girls appropriately garbed for the occasion. So realistic was the cotton snow that the three tobogganners afterward reported that their costumes felt very comfortable. When one considers the temperature that day at seventy-six degrees in the shade the reader can better appreciate the refreshing effect of the Gilt Edge float.

The parade judges evidently felt that the Gilt Edge float deserved

Inland Steel Co. Issues Revised Booklet on Extras and Differentials

The Inland Steel Company, First National Bank Building, Chicago, have just revised and are distributing a very complete booklet on extras and differentials, including, as well, other information of value and relating to sheet mill products.

It is becoming increasingly the policy of manufacturers making more than one type of product to advise the users for what specific purpose each one of the products is best adapted, in order that their products will have the best possible chance to make good out on the job.

The purpose of this little booklet is just that. There are listed some thirty-eight or more types of sheets in it and under each one there is a brief statement of the purposes for which each type of sheet is best adapted.

In addition the booklet contains prices and sizes of these extras and differentials, together with tables of weights, a statement of sheet steel tolerances, tables of equivalent thicknesses for the United States Standard gage.

Every sheet metal contractor should avail himself of the opportunity to get this revised booklet.

**Henry Furnace
Issues Data on
New Moncrief Series "C"**

The Henry Furnace & Foundry Company, 3471 East 49th street, Cleveland, Ohio, has announced that its new series "C" Moncrief furnace is now ready for distribution.

This furnace, the manufacturers say, includes every feature in the construction of furnaces that has proved valuable by experience in the construction of such furnaces, together with new improvements which anticipate the future for many years to come.

A circular which the company

Looking at the Furnace Through Standard Code Glasses

Chicago Furnace Installer Puts His Inspiration Into Words for Others' Guidance

SOME warm air furnace installers, at least, and their number is increasing every day, have a spirit toward the industry of which they are a part which is bound to redound to the benefit of the industry.

Sam J. Sorensen, 1336 North Central avenue, Chicago, Illinois, a warm air furnace installer, has evolved 18 pointers which, if followed by other installers, will build a better industry. Here they are:

Eighteen Pointers That Make a Good Installer

1. I will place register heads, stacks, boots on inside walls, and see that they are Standard Code in size, sealed tight on the outside at rough floor line in order to prevent smoke, dirt and dust from streaking the walls.

2. I will see that registers fit tight and have plenty of free area.

3. I will see that boots are not choked in size at any one place.

4. I will see that the furnace is of ample size, placed to the best advantage, keeping in mind to equal as near as possible length of all pipes and favor northwest exposures.

5. I will mount furnace carefully, taking pains that it is smoke and gas tight.

has issued explains in detail what each one of these improvements is and how it benefits the furnace and the heating system. Each section of the furnace is fully illustrated with cuts accompanied by adequate written description to point out clearly but in the shortest possible time all of the improvements and features of the furnace.

One of these circulars can be had by dropping a line to the Henry Furnace & Foundry Company, Cleveland, and every furnace installer who wants to keep informed on the latest developments should avail himself of this privilege to get the booklet.

shoe is 2 inches below the grate line, has free area equal to the pipe size and that I shield the shoe without obstructing free flow of air.

13. I will never run cold air returns over the furnace, unless I shield them from the warm air at the ceiling.

14. I will install the chain regulator so that it works free and easy.

15. I will strip all cold air joints to prevent dust from getting into the system.

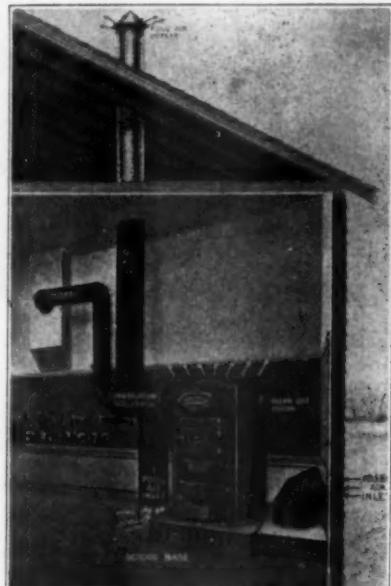
16. I will pick up all scraps and leave the basement as neat as possible, so as to better the appearance of furnace and make a good impression.

17. I will give the job a good inspection after its completion so that there will not be a comeback, thus avoiding further labor costs.

18. Then sing this song: "I am looking at the world through Standard Code glasses, all I see is good furnace work now."

**Giving Assistance
to William Koerner,
Du Quoin, Illinois**

The accompanying illustration shows the method that the International Heater Company would em-



**Helping William A. Koerner with
School Foul Air Vent**

ploy in solving the problem of William Koerner, Du Quoin, Illinois, which appeared originally in the

12. I will see that the cold air

February 26 issue of American Artisan, asking how to provide for a foul air vent in a small rural school house that is heated with a room heater furnace.

To Discuss Plan for Simplifying Bolt and Nut Containers

Nine items will be discussed at Washington on March 23 in connection with the simplification of containers for bolts and nuts. The conference has been called as a result of a request by the Bolt, Nut & Rivet Manufacturers' Associa-

tion through its Committee on Standard Packing, submitting proposals for reducing the number of sizes of containers used in handling, packing and shipping of bolts and nuts. The association requested the National Committee on Metals Utilization to organize a general conference of all interests under the regular procedure of the Division of Simplified Practice, Department of Commerce, to consider the details and develop a unanimous simplified practice recommendation for use by the membership.

are wild about.

"Paul Jordan, Chairman of Publicity, may be depended upon to give all the information permitted through the mail and through the air."

W. B. Collins Finds Klentzer & Klentzer Job All Out of Proportion

W. B. Collins, of the C. & L. Sheet Metal Works, 15 North Frederick street, Oelwein, Iowa, finds the Klentzer & Klentzer warm air heating job all out of proportion. Here's what he says:

"I will give my solution to the Klentzer & Klentzer job in as few words as possible. I find that the Standard Code calls for only 712 inches of pipe area for this job, while they have 756.

"They are all out of proportion, however. The front bed room and front room pipes should be increased to 14-inch and 16-inch. I should suggest, though, as this job is already in, that they add one 12-inch pipe, with a No. 15 register in the front room tandem to the front bed room on the first floor.

"This, however, is not the main trouble with the job. I should turn the furnace to face the south; move the cold air register to the northwest corner of the dining room, and move the hall register just west of the chimney on the hall side.

"Then I should use transition shoes not over 12 inches high. (All of my patterns are 11 inches high.) I should also use transitions in going from round to oblong cold air pipes.

"In regard to the vents to the attic, my experience has been that these vents are no good without a roof connection to take cold air from the outside equal approximately to 75 per cent of the combined area of the vents.

"If this effort of mine is of any assistance to Klentzer & Klentzer, the pleasure has been all mine.

"But say, folks, I got a lot of kick out of Frank McKay's letter. He knows his 'stuff.' What has become of Fred Nesbit? Wonder if I could get a fall or a rise out of him?"

Indiana Heating and Sheet Metal Men to Meet May 4, 5 and 6

Meeting Will Be Held at Hotel Severin, Indianapolis, by Three Associations

THE Indiana Warm Air Heating and Ventilating Association, the Indiana Fur-Mets and the Sheet Metal Contractors' Association of Indiana will hold their annual convention at the Hotel Severin, Indianapolis, May 4, 5 and 6, 1927, according to information received from Frank E. Anderson, Secretary of the Indiana Warm Air Heating and Ventilating Association. He says:

"The Board of Directors of the Indiana Warm Air Heating & Ventilating Association and the Indiana Fur-Mets held a meeting March 11, at Hotel Severin, Indianapolis, with representatives of the state sheet metal contractors present. It was there decided to hold the Tri-Association convention at Hotel Severin, Indianapolis, Indiana, May 4, 5 and 6, 1927.

"All warm air heating, sheet metal contractors, manufacturers and jobbers' sales representatives and allied interests are invited.

"This date was chosen in order not to conflict with a meeting of any other national or state body in which the heating contractors and sales representatives might be interested, and it is expected by the co-operation of all three associations, that this convention will surpass any

held heretofore.

"The convention committee is as followed: O. Voorhees, Chairman, 36 W. 10th St., Indianapolis; Paul Jordan, Treasurer, 631 So. Delaware St., Indianapolis; Frank E. Anderson, Secretary, 2242 Liberty Ave., Terre Haute.

"G. A. Voorhees, Chairman of the program committee, is planning an unusually strong program, which will make this convention of special concern to all men interested in warm air heating and sheet metal work; in fact, it is expected that the program will offer a schooling of such educational value as to be worth many times the cost of attendance.

"H. A. Beaman, Zionsville, Indiana, Chairman of exhibits and hotel, advises that exhibitors may secure large sample rooms with bed at a very reasonable rate. Exhibitors will all be on one floor. Reservations must be in by April 18.

"The entertainment committee requested that their names be kept secret, however, those present are certain these men are regular "Double-Compound Super De Luxe Artists on this entertainment stuff and are wild to know what's doing. Yes, we heard there was to be a banquet, but it's the 'trimmin's' we

Heat from Fire Pot Radiating Into C. A. Shoes One of Klenzter Job Faults

Installation Should Have Baffles Between Cold Air Shoes to Avoid "Rocking"

By H. F. PURCELL, Taylor-Forbes Co., Ltd., Vancouver

THE Klenzter & Klenzter problem as presented in your issue of the 19th of February is particularly interesting as being an example of a job where every effort has apparently been made to create an efficient heating plant, but which persists in not being efficient.

At this distance from Fowler, Indiana, I should say that the trouble is in the basement, and since the temperature on the upper floors has been raised to 60 degrees, it is not so much a case of "Dead" air as "Sluggish" circulation, and looking at the problem from this viewpoint it is not very difficult to suggest a betterment change.

Apart from undersized pipes (which is not the fault in this instance), there are two chief factors which can cause "Sluggishness."

First—The heat from fire-pot radiating into cold air shoes, and this is probably where the trouble is in this case.

The make of furnace is not shown, but since the grate level is probably between 11 and 12 inches from floor, the 14x33 shoes used would permit of this radiation, which in turn would check the flow of cold air from the 24-inch pipe and slow up circulation.

I suggest using a 10x44 or 11x40 shoe, with 24-inch collar.

Secondly—The "rocking" of cold air from one shoe to another, instead of flowing upward, is frequently met with when a baffle between the shoes is omitted.

If there is no baffle between these shoes, I should suggest placing one in a vertical position midway between shoes (using the low shoes instead of the 14-inch ones), stretching from casing to firepot and about 15 inches high.

These two points should overcome

the difficulty, though had one of the cold air faces been placed at the foot of stairway, it would have been perhaps a little better arrangement.

The fact that the furnace showed no improvement when the lower casing was removed does not prove anything, as the bottom edge of the upper casing would be too high to induce circulation.

Had a temporary bottom casing been tried with its bottom edge 10 inches from the floor, I think it would have told a different story. The difference in weight between warm air and cold air is so slight that a very minor detail will frequently upset the balance and slow-up circulation.

I shall, if the above suggestions be carried out and found successful, be glad to hear from the installers, as it is by studying the problems of others, and applying the remedies to our own installations, that we can help increase the efficiency and the field of warm air heating.



Iowa Sheet Metal Convention and Short Course, Iowa State College, Ames, Iowa, March 21, 22 and 23, 1927. R. T. Northrup, Secretary, Fort Dodge, Iowa.

Sheet Metal Contractors' Association of Florida, St. Petersburg, Florida, March 28 and 29, 1927, at the Suwanee Hotel. Secretary, G. H. Leavitt, 111 Main Street, Tampa, Florida.

Sheet Metal Contractors' Association of Pennsylvania and the Distributors' and Salesmen's Auxiliary of Pennsylvania, Hotel Bethlehem, Bethlehem, Pennsylvania, April 5, 6 and 7, 1927. W. F. Angermyer, 7253 Frankstown Avenue, Pittsburgh, Secretary. George A. Hesky, 314 Packer Avenue, Bethlehem, Chairman Convention Committee.

Illinois Sheet Metal Contractors' Association, Ottawa, Illinois, April 6 and 7, 1927. Fred J. Graeff, Secretary, 222 East Washington Street, Springfield, Illinois.

National Warm Air Heating and

Ventilating Association, Hotel Cleveland, Cleveland, Ohio, April 13 and 14, 1927. Allen W. Williams, 168 East Long Street, Columbus, Ohio, Secretary.

Southeastern Retail Hardware and Implement Association, composed of Alabama, Florida, Georgia and Tennessee, Convention and Exhibition, Jacksonville, April 19, 20, 21, 1927. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta, Georgia.

Texas Sheet Metal Contractors' Association, Hotel Adolphus, Dallas, Texas, April 24 and 25. Harry Stanyer, Secretary-Treasurer, 2422 Alamo Street, Dallas.

National Association of Sheet Metal Contractors, Adolphus Hotel, Dallas, Texas, April 26, 27, 28 and 29, 1927. W. C. Markle, Secretary, 850 West North Avenue, Pittsburgh, Pennsylvania.

Arkansas Retail Hardware Association Convention, Little Rock, May, 1927. L. P. Biggs, Secretary, Little Rock.

Indiana Fur-mets annual convention, Hotel Severin, Indianapolis, May 4, 5 and 6, 1927. Harry R. Jones, 308 Kenmore road, Indianapolis, Secretary.

Indiana Heating and Ventilating Association Convention, Hotel Severin, Indianapolis, May 4, 5 and 6, 1927. Frank E. Anderson, Terre Haute, Indiana, Secretary.

Indiana Sheet Metal Contractors' Convention, Hotel Severin, Indianapolis, May 4, 5 and 6, 1927. William N. Strassner, Anderson, Indiana, secretary.

Southern Hardware Jobbers' Association, Peabody Hotel, Memphis, Tennessee, May 10 to 13, 1927. John Donnan, Secretary, Richmond, Virginia.

Old Guard Southern Hardware Salesmen's Association, Peabody Hotel, Memphis, Tennessee, May 11, 1927. R. P. Boyd, Secretary, R. F. D. No. 4, Box 19, Knoxville, Tennessee.

Mississippi Retail Hardware and Implement Association Convention and Exhibition, headquarters, White House, Biloxi, June 13, 14, 15, 1927. Buy Nason, Secretary, Columbus.

National Retail Hardware Association Congress, Mackinac Island, Michigan, June, 1927. H. P. Sheets, Secretary-Treasurer, 130 East Washington Street, Indianapolis, Indiana.

Missouri Sheet Metal Contractors' Association at Sedalia, Missouri, July 12 and 13, 1927. Ben Kolbenschlag, 3618 North Grand Street, St. Louis, Secretary.

Retail Hardware Doings

Arkansas

Erwin Craig and James T. Fortenberry of Batesville have purchased the hardware store of George Rosenthal.

Pittsman-Powell Hardware Company, Gurdon, have gone out of business.



Spring opens a great vista of opportunity. Not only repairs of all kinds made necessary by the rigors of Winter, but new installations of various kinds combine to make this period of the year a harvest time for the contractor who will take advantage of it. Point out to householders the needed things which you alone can do profitably for both them and yourself.

The sheet metal business is a business of selling more than a business of order-taking. A bit of organized prospecting by any contractor is sure to bring tangible results at any season, but particularly in the Spring.

For whatever type of repairs and new building work the

contractor may be engaged in, Sheet Steel must of economic necessity play a definite part. Being a material of great serviceability it becomes in your hands one of the most versatile materials for an endless number of applications.

One of the most important functions of the sheet metal contractor in the use and application of Sheet Steel is to encourage its use in adequate gauge for the service required. Persistent adherence to this policy is certain to redound to the credit of those contractors who practice it. Full co-operation may be expected from the SHEET STEEL TRADE EXTENSION COMMITTEE, OLIVER BUILDING, PITTSBURGH, PA.



This trade-mark stenciled on galvanized Sheet Steel is definite insurance to the buyer that every sheet so branded is of prime quality—full weight for the gauge stamped on the sheet—never less than 28 gauge—and that the galvanizing is of the full weight and quality established by the SHEET STEEL TRADE EXTENSION COMMITTEE specification.

SHEET STEEL
for Strength Safety Beauty and Economy

General Tone of Steel Market Is Favorable —Good Buying Continues

Pig Iron Sales Show Some Restriction—Shipments in Nonferrous Metals Are More Active

IN TWO weeks the iron and steel industry will be making the turn into the second quarter and apparently will be confronted with a bituminous coal strike, yet, indicative of the new order that prevails, neither condition has provided any appreciable market stimulus.

Hand-to-mouth buying is so dominant in steel that little is heard of second quarter coverage, but current requirements are of such proportions as to insure a March perceptibly better than February, impart a stronger tone to all markets save some in the East and lengthen slightly the modest backlog of some producers.

The week's developments strike a balance on the side of improvement. Incoming business suffices to maintain an average steel production rate of about 88 per cent, with steel corporation subsidiaries above 95. Steel prices generally are holding, while the tendency in pig iron is upward.

Pig Iron

At Pittsburgh pig iron shippers say they have never witnessed a tighter situation in this district, particularly in steelmaking grades.

Virtual dropping out of four or five steel interests, due to the possibility of the coal strike, is exerting considerable influence. Even supplies for merchant stacks are limited, as at least three are unable to take on large tonnages. Some of these are quoting basic iron at \$19, valley. The last sales of 1000 tons by a shipper in the Canton district to a user in this locality brought \$18.50, valley.

Bessemer iron now is firm at \$19.50, valley. Sales have been made at that price, in 100 to 1000 tons at a time. A few small inquiries still are pending. One valley shipper sold 600 tons of No. 2 foundry iron at \$18.50, valley, with sev-

eral smaller lots. The largest inquiry pending involves 1000 tons of No. 2 iron.

Total amount of northern pig iron sold at Chicago in the past two weeks is estimated at close to 100,000 tons, largely for second quarter. Among current inquiries are 1500 tons of No. 2 foundry iron for a Chicago district melter, 300 tons of standard bessemer, and 500 tons of foundry iron for a melter west of Chicago.

A considerable tonnage of No. 2 foundry and malleable has been sold in northern Illinois and southern Wisconsin in the past several days at \$20, while 1000 tons of malleable was placed in Milwaukee on the basis of \$20, Chicago furnace.

Small hand-to-mouth buying still predominates in the Birmingham pig iron market. Carloads up to 200 tons are calling for \$1 premium over the base price of \$18, for foundry, iron. Production is at the same rate as at the beginning of the month, but with indications of an increase for the month, in comparison with the tonnage in March, 1926.

Copper

Stocks of refined copper increased again in February, this time by more than 11,000 tons to 105,020, the largest since early in 1925. The increase was the result of continued expansion in refinery output, the latter making a new record of 4368 tons a day.

Domestic shipments last month totaled 67,564 tons, or slightly less than the January daily rate, but the first two months of the year were nearly 6000 tons larger than a year ago. Total shipments were more than 5000 tons greater than a year ago.

The price is holding steady at 13.37½ cents, Connecticut, and 13.50 cents to 13.75 cents, Middle

West. Little new business is being done but shipments are active, and some requests are made for shipment in March of metal that had been specified for April.

Zinc

Stocks of zinc increased more than 3000 tons last month, while production was cut very slightly on a daily basis to a total of 51,341 tons.

Domestic shipments were 43,555 or slightly larger than the January average on a daily basis but slightly smaller actually.

Tin

Buying of tin by users has been moderate, and it is believed that much purchasing remains to be done for May, with a little still to be done for earlier positions.

Lead

Prices of lead are fairly steady but the market is not quite so strong as a short while ago. Interest now is largely in April shipments but some lead also is bought each day for March. Stocks of lead increased several thousand tons in February and stood at the largest figure in several years.

Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, \$43.00; commercial 45-55, \$40.00; and plumbers', \$37.00, all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$17.00 to \$17.50; old iron axles, \$22.00 to \$22.50; steel springs, \$16.00 to \$16.50; No. 1 wrought iron, \$11.50 to \$12.00; No. 1 cast, \$15.50 to \$16.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 9 cents; zinc, 4½ cents, and cast aluminum, 15 cents.

REMEMBER that Target-and-Arrow roofing tin can be painted any desired color and while this is true of any other tin, by using Target-and-Arrow as a foundation for your color schemes you are assured that your roofs and flashings will outlast the buildings they cover. That this is not an idle boast is demonstrated by our records—among them are twenty roofs the sum of whose lives is over a thousand years!

N. & G. TAYLOR COMPANY

PHILADELPHIA

H. N. TAYLOR, President

Established in the U. S. A. in 1810 by William, George and Tracy Taylor, descendants of Major John Hanbury, who introduced the art of tinning into Wales in 1720



ARCHITECTURAL SHEET METAL ORNAMENTS

Made of
ZINC
COPPER
BRONZE
OR
LEAD

Also
METAL CEILINGS

SPECIALISTS IN SPECIAL WORK
ESTIMATES SUBMITTED ON RECEIPT
OF
BLUE PRINTS OR DRAWINGS

Ornamental Catalogue No. 50 on request

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ILLINOIS

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620 South Michigan Avenue

OSBORN'S LEAD COTE



It has the flexible strength
of steel.

It has the rust-resisting
qualities of lead.

It lends itself to artistic
development.

It is a durable and economi-
cal sheet metal.

It is uniformly soft and
level—easy to work.

Its coating will not flake
or peel.

Immediate shipment from
stock—No. 18 to 28 gauges.

The J. M. & L. A. OSBORN CO.

"Everything used in Sheet Metal Work"

CLEVELAND

Buffalo Warehouse . . . 64-68 Rapin Street

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON

Chicago Fdy., No. 2.....	\$20.00
Southern Fdy., No. 2.....	24.01
Lake Superior Charcoal.....	27.04
Malleable.....	20.00

FIRST QUALITY BRIGHT TIN PLATES

IC 20x28 112 sheets.....	\$25.10
IX 20x28.....	22.60
IXX 20x28 56 sheets.....	16.20
IXXX 20x28.....	17.55
IXXXX 20x28.....	18.95

TERNE PLATES

Per Box	
IC 20x28, 40-lb. 112 sheets.....	\$26.00
IX 20x28, 40-lb. 112 sheets.....	23.50
IC 20x28, 25-lb. 112 sheets.....	21.75
IX 20x28, 25-lb. 112 sheets.....	24.25
IC 20x28, 20-lb. 112 sheets.....	20.00
IV 20x28, 20-lb. 112 sheets.....	22.50
IC 20x28, 15-lb. 112 sheets.....	18.50

"ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including

1/4 in.—100 lbs. \$4.55

COKE PLATES

Cokes, 80 lbs., base, 20x28.....	\$13.60
Cokes, 90 lbs., base, 20x28.....	13.80
Cokes, 100 lbs., base, 20x28.....	14.00
Cokes, 107 lbs., base, 1c	
20x28.....	14.30
Cokes, 125 lbs., base IX	
20x28.....	16.40
Cokes, 155 lbs., base, 56	
sheets.....	9.20
Cokes, 175 lbs., base, 56	
sheets.....	10.05
Cokes, 195 lbs., base, 56	
sheets.....	10.90

BLUE ANNEALED SHEETS

Base 10 ga.....	per 100 lbs. \$2.80
"Armco" 10 ga.....	per 100 lbs. 4.00

ONE PASS COLD ROLLED

BLACK	
No. 18-20.....	per 100 lbs. \$3.75
No. 22.....	3.90
No. 24.....	3.95
No. 26.....	4.05
No. 27.....	4.10
No. 28.....	4.20
No. 29.....	4.35
No. 30.....	4.45

"ARMCO" GALVANIZED

"Armco" 24.....	per 100 lbs. \$6.15
-----------------	---------------------

GALVANIZED

No. 16.....	per 100 lbs. \$4.30
No. 18.....	4.45
No. 20.....	4.60
No. 22.....	4.65
No. 24.....	4.80
No. 26.....	5.05
No. 27.....	5.15
No. 28.....	5.30
No. 30.....	5.70

BAR SOLDER

Warranted 50-50.....	per 100 lbs. \$43.00
Commercial 45-55.....	per 100 lbs. 40.00
Plumbers.....	per 100 lbs. 37.00

ZINC

In Slabs.....	\$8.50
---------------	--------

SHEET ZINC

Cash Lots (600 lbs.).....	\$13.00
Sheet Lots.....	14.00

BRASS

Sheets, Chicago base.....	18 1/4c
Mill Base.....	18 1/4c
Tubing, brazed base.....	27 1/4c
Wire, base.....	19 1/4c
Rods, base.....	16 1/4c

COPPER

Sheets, Chicago base.....	22c
Mill Base.....	21c
Tubing, seamless base.....	25c
Wire, No. 9, B & S Ga.....	18 1/4c
Wire, No. 10, B & S Ga.....	18 1/4c
Wire, No. 11, B & S Ga.....	19c
Wire, No. 8, B & S Ga. and heavier.....	17 1/4c

LEAD.

American Pig.....	\$8.40
Bar.....	9.40

SHEET

Full Coils.....	per 100 lbs. 14.00
Cut Coils.....	per 100 lbs. 14.25

TIN

Pig tin.....	per 100 lbs. \$77.00
Bar tin.....	per 100 lbs. 78.00

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ASBESTOS

Paper up to 1/16.....	6c per lb.
Roll board.....	6 1/2c per lb.
Mill board 3/32 to 1/4.....	6c per lb.
Corrugated Paper (250 sq. ft. to roll).....	\$6.00 per roll

BRUSHES

Hot Air Pipe Cleaning	Bristle, with handle, each \$0.85
-----------------------	-----------------------------------

FLUE CLEANING

Steel only, each.....	1.25
-----------------------	------

BURRS

Copper Burrs only.....	40-5%
------------------------	-------

CEMENT, FURNACE

American Seal, 5-lb. cans, net 3 40	
American Seal, 10-lb. cans, net 30	
American Seal, 25-lb. cans, net 2 00	
Pecora.....	per 100 lbs. 7.51

CHIMNEY TOPS

Iwan's Complete Rev. & Vent.....	30%
Iwan's Iron Mountain only.....	35%
Standard.....	30 to 40%

CLINKER TONGS

Front Rank, each.....	\$0.75
Per doz.	8.40

CLIPS

Damper	Acme, with all tail pieces, per doz.
Non Rivet tail pieces, per doz.	25

COPPERS—SOLDERING

Pointed Roofing	3 lb. and heavier..... per lb. 40c
2 1/2 lb.	per lb. 45c
1 lb.	per lb. 48c
1 1/2 lb.	per lb. 55c
1 lb.	per lb. 60c

CORNICE BRAKES

Chicago Steel Bending	Nos. 1 to 6B..... Net
-----------------------	-----------------------

CUT-OFFS

Gal., plain, round or cor. rd. 28 gauge.....	20%
28 gauge.....	35%

DAMPERS

"Yankee" Hot Air	7 inch, each 20c, doz. \$1.75
8 inch, each 25c, doz.	2.40
9 inch, each 30c, doz.	2.75
10 inch, each 32c, doz.	3.00

SMOKE PIPE

7 inch, each.....	\$0.35
8 inch, each.....	40
9 inch, each.....	50
10 inch, each.....	60
12 inch, each.....	90

REVERSIBLE CHECK

8 inch, each.....	\$1.55
9 inch, each.....	1.70

DIGGERS

Post Hole	Iwan's Split Handle (Eureka)
4-ft. Handle..... per doz.	\$14.00
7-ft. Handle..... per doz.	36.00
Iwan's Hercules pattern, per doz.	14.90

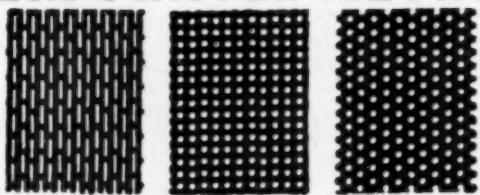
EAVES TROUGH

Galv. Crimpedge, crated	75 & 5%
Zinc, "Barnes"	60%

ELBOWS

Conductor Pipe	Galv., plain or corrugated, round flat Crimp.

PERFORATED METALS



All Sizes and Shapes of Holes
In Steel, Zinc, Brass, Copper, Tinplate, etc.
For All Screening, Ventilating and Draining
EVERYTHING IN PERFORATING METAL

THE HARRINGTON & KING PERFORATING CO.
5649 FILLMORE ST.—CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 LIBERTY ST.

The NEW IMPROVED "STANDARD"



"Standard" Ventilator and Chimney Cap—
Most Efficient Combination on the market.

STANDARD VENTILATOR CO., Lewisburg, Pa.

ROTATABLE VENTILATOR

THIS favorite ventilator has been further improved to insure—

*Greater Durability
Quieter Operation
Greater Efficiency
Better Balance*

The New Cone-top Suspension, new Bronze Guide Bushings, and Cross-Braced Skirt are the new features. Let us tell you in detail all about this better ventilator.

Write for special circular and prices today

ARMCO INGOT-IRON
— SHOP —
Quality Work with Quality Iron

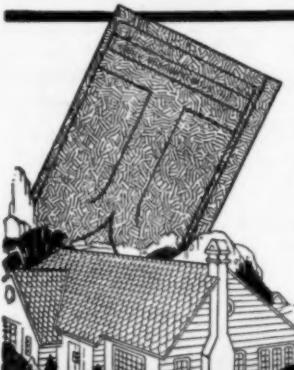
**The Sign that
Sells the Sheets
that Satisfy**

ARMCO'S National Advertising, reaching millions of homes, is directing sheet metal prospects to Ingot Iron Shops.

Are you getting your share of this profitable business? If not, write for your franchise.

The American Rolling Mill Company
Middletown, Ohio

Export: The ARMCO International Corp.
Cable Address: ARMCO, Middletown



Painted Shingles—also two kinds of Galvanized Shingles

ALL Cortright Metal Shingles come in four patterns. The painted shingles can be had either red or green. Cortright Hand Dipped Galvanized Shingles are stamped from prime roofing tin and dipped separately by hand in molten zinc. Our other shingles are stamped from sheets already galvanized.

CORTRIGHT METAL ROOFING CO.
50 N. 23rd Street, Philadelphia
536 S. Clark Street, Chicago

CORTRIGHT METAL SHINGLES

Round
Corrugated

Plain Round



NEVER MADE WITHOUT THIS

TRADE **F. Dieckmann** MARK

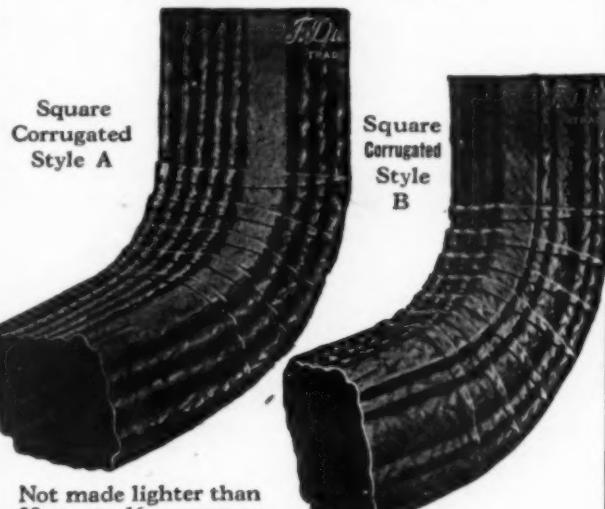
Quality and Service Made 'em Famous

Made of one piece of heavy gauge material, in all styles and angles from 10 to 90 degrees, of 24, 26, 28 ga. ternes, then galvanized after formation.

**DIECKMANN
Elbows and Shoes**
are the standard of the market
and always give satisfaction

Send for new catalogue 26 showing complete line

The Ferdinand Dieckmann Co.
P. O. Station B, Cincinnati, O.



Not made lighter than
28 ga. or 16 oz. copper

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NETTING, POULTRY

Galvanized before weaving 57 1/2-5%
Galvanized after weaving 52 1/2-5%

PASTE

Asbestos Dry Paste:
200-lb. barrel \$16.00
100-lb. barrel 8.75
35-lb. pail 3.50
10-lb. bag 1.10
5-lb. bag 60
2 1/2-lb. cartons 35

PIPE

Conductor
Cor. Rd., Plain Rd. or Sq.

GALVANIZED

Crated and nested (all gauges) 75-2 1/2%
Crated and not nested (all gauges) 70-15%

FURNACE PIPE

Double Wall Pipe and Fittings 50%
Single Wall Pipe, Round Galvanized Pipe 50%
Galvanized and Tin Fittings 50%

LEAD

Per 100 lbs. \$12.50

STOVE PIPE

"Milcor" "Titelock" Uniform
Blue Stove
28 gauge, 5 inch U. C. nested 11.50
28 gauge, 6 inch U. C. nested 12.25
28 gauge, 7 inch U. C. nested 14.25
30 gauge, 5 inch U. C. nested 10.50
30 gauge, 6 inch U. C. nested 11.25
30 gauge, 7 inch U. C. nested 13.25

T-JOINT MADE UP

6-inch, 28 ga. per Doz. \$ 5.00

ALL ZINC

No. 11, all styles 60%

POKERS, STOVE

W/r't Steel, str't or bent, per doz. \$ 0.75
Nickel Plated, coll. handles, per doz. 1.10

POKERS, FURNACE

Each \$0.50

PULLEYS

Furnace Tackle per doz. \$ 0.60
..... per gro. 6.00

FURNACE SCREW (ENAMELED)

..... per doz. 75

VENTILATING REGISTER

Per gross 9.00
Small, per pair 30
Large, per pair 60

PUTTY

Commercial Putty, 100-lb. Kits \$3.40

QUADRANTS

Malleable Iron Damper 10%

REDUCERS—OVAL STOVE PIPE

7-6, 1 doz. in carton \$2.25

BASEBOARD REGISTERS

50%

FLOOR REGISTERS AND BORDERS

Cast Iron 20%
Steel and Semi-Steel 40%
Baseboard 40%
Adjustable Ceiling Ventilators 40%

Register Faces—Cast and Steel

Japaned, Bronzed and

Plated, 4x6 to 14x14 40%

Large Register Faces—Cast, 14x14 to 38x42 60%

Large Register Faces—Steel, 14x14 to 38x42 65%

Galv., Plain Ridge Roll, b'did 75-10-5%

Galv., Plain Ridge Roll, crated 75-10%

Globe Finials for Ridge Roll 50%

ROOFING

Per Square
Best grade, slate surf. prep'd \$2.30
Best talc surfaced 2.65
Medium talc surfaced 2.00
Light talc surfaced 1.20
Red Rosin Sheeting, per ton 57.00

SCREWS

7. 1/2 x 1/2, per gross \$0.52
No. 10, 3/8 x 1/16, per gross 68
No. 14, 7/8 x 1/4, per gross 3.5

SHEARS, TINNERS' & MACHINISTS'

Viking \$22.00
Lennox Throatless
No. 18 35%
Shear blades 10%
(f. o. b. Marshalltown, Iowa.)

SHIELDS, REGISTER

No. 1 "Gem" floor \$12.00 doz.
No. 2 "Gem" wall 6.00 doz.

SHOES

Galv. 28 Gauge, Plain or
corg. round flat crimp 60%
26 gauge round flat crimp 45%
24 gauge round flat crimp 15%

SNIPS, TINNERS'

Clover Leaf 40 & 10%
National 40 & 10%
Star 50%
Milcor Net

SQUARES

Steel and Iron Net
(Add for bluing, \$3 per doz. net)

Mitre Net

Try Net

Try and Bevel Net

Try and Mitre Net

Fox's per doz. \$6.00

Winterbottom's 10%

STOPPERS, FLUE

Common per doz. \$1.10
Gem, No. 1 per doz. 1.10
Gem, flat, No. 3 per doz. 1.00

VENTILATORS

Standard 20 to 40%

WIRE

Plain annealed wire, No. 8, per 100 lbs. \$3.05

Galvanized barb wire, per 100 lbs. 3.90

Wire cloth—Black painted, 12-mesh, per 100 sq. ft. 1.65

Cattle Wire—galvanized catch weight spool, per 100 lbs. 3.65

Galvanized Hog Wire, 80 rod spool, per spool 3.17

Galvanized plain wire, No. 9, per 100 lbs. 3.40

Stove Pipe, per stone 1.10

WRINGERS

No. 790, Guarantee each \$ 5.10
No. 770, Bicycle each 4.70
No. 670, Domestic each 4.35
No. 110, Brighton each 3.70
No. 750, Guarantee each 5.10
No. 740, Bicycle each 4.70
No. 22, Pioneer each 3.40
No. 2, Superb each 2.65

VESUVIUS

BLOW TORCHES



in pint or quart sizes
With quickly removable soldering iron
hooks.

Vesuvius Blow Torches are
made of brass or non-corrosive
oxydized terne plate. The lat-
ter is particularly recommended
for hard usage.

Write for prices and illustrated
circular today

QUICK MEAL STOVE COMPANY
Div. American Stove Company
825 Chouteau Ave.

St. Louis, Mo.



Torrid

"Torrid" Tinners Furnaces

have stood the test of time.
Imitations come, go, are
changed but "Torrid" stand-
ard is unalterable and price
always right.

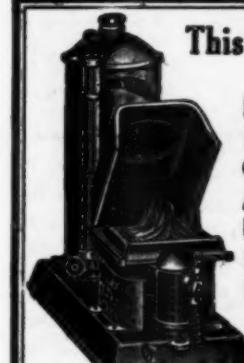
GEO. W. DIENER
MFG. CO., CHICAGO
Makers of fine Blow Torches and
Fire Pots.

This Is the Fire Pot You Need WHY?

B It always burns with a blue flame
which produces THE HEAT.
E A 3½ pound copper will heat and
melt solder in TWO MINUTES.
C The pot will generate and operate out-
doors in ANY KIND OF WEATHER.
A It will heat irons as fast as they are
cooled. No time wasted.
U Less than a gallon of gasoline is
used in a day.
S It is smokeless and odorless while in
operation.
E It can be turned down low when not
in use.

Order yours now. Only \$11.00 f. o. b.
factory. Two per cent discount when cash
accompanies the order.

DOUBLE BLAST MFG. CO., Inc.
Commonwealth Ave. North Chicago, Ill.



No. 38 Double Blast
Gasoline Fire Pot

50-INCH FORMING ROLL

This Forming Roll is built in all
standard sizes, with our Patented
Opening Device by means of
which it is opened and closed in
a few seconds.

We build a complete line of Shears
and Punches, all sizes, or hand or
belt power.

Write for Catalog "R"
BERTSCH & CO., Cambridge City, Ind.



Read the Wants and Sales Pages'

Say you saw it in AMERICAN ARTISAN—Thank you!

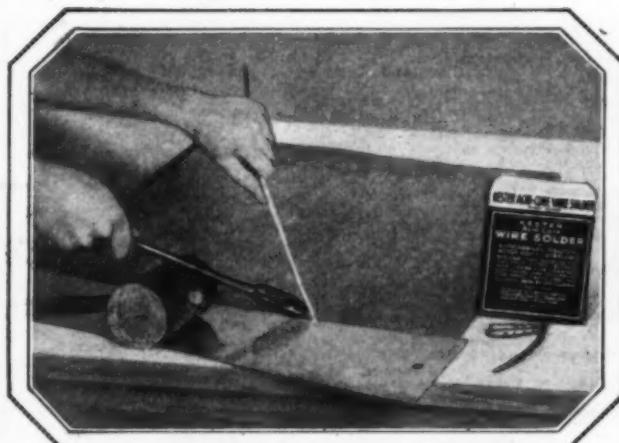
KESTER SOLDER

Self-Fluxing



(Underwriters' Laboratories Inspected)

"Requires Only Heat"

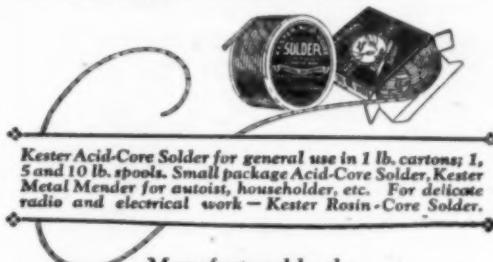


Flows Under the Seams

IT IS IMPORTANT in Sheet Metal work
to have well soldered joints. A diffi-
cult job may be well handled to the
finish—but if the soldering is weak,
the work falls flat.

By using Kester Solder, you know
your job will last. Inside of this hollow
wire solder are tiny pockets full of
scientifically prepared flux. This flows
to the job just before the solder melts,
and you guide it right where you want it.

This eliminates the old acid pot and
saves one-third of the time together with
labor and material. Kester figures a
neat saving for the steady user.

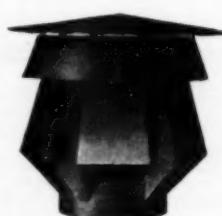


Kester Acid-Core Solder for general use in 1 lb. cartons; 1,
5 and 10 lb. spools. Small package Acid-Core Solder, Kester
Metal Mender for autoist, householder, etc. For delicate
radio and electrical work—Kester Rosin-Core Solder.

Manufactured by the
CHICAGO SOLDER COMPANY
4241 Wrightwood Ave.
CHICAGO, U. S. A.

BUYERS' DIRECTORY

Acetylene (Gas) Dissolved.	Enamel Wire.	Waterman-Waterbury Co.,	Osborn Co., The J. M. & L. A.,
Prest-O-Lite Co., Inc., New York, N. Y.	Lalance & Grosjean Mfg. Co., Chicago, Ill.	Minneapolis, Minn.	Cleveland, Ohio
Asbestos Paper.	Wood Faces—Cold Air.	Western Steel Products Co., Duluth, Minn.	Peck, Stow & Wilcox Co., Southington, Conn.
Sall Mountain Co., Chicago, Ill.	American Wood Register Co., Plymouth, Ind.	Wise Furnace Co., Akron, Ohio	Whitney Mfg. Co., W. A., Rockford, Ill.
Asbestos Products	Eaglesfield Ventilator Co., Indianapolis, Ind.	Williamson Heater Co., Cincinnati, Ohio	Whitney Metal Tool Co., Rockford, Ill.
Sall Mountain Co., Chicago, Ill.	Milwaukee Corrugating Co., Milwaukee, Wis.	Gardens—Metal.	Mailing Lists.
Bale Ties.		Milwaukee Corrugating Co., Milwaukee, Wis.	R. L. Polk Co., Detroit, Mich.
American Steel & Wire Co., Chicago, Ill.		The Thomas & Armstrong Co., London, Ohio	Ross-Gould Co., St. Louis, Mo.
Blowers.	Fences.	Gas (Acetylene) Dissolved.	
Sturtevant Co., B. F., Boston, Mass.	American Steel & Wire Co., Chicago, Ill.	Prest-O-Lite Co., Inc., New York, N. Y.	
Boats—Stoves.		Gas (Nitrogen).	Diamond Mfg. Co., Wyoming, Pa.
The Kirk-Latty Co., Cleveland, Ohio		Linde Air Products Co., New York, N. Y.	Harrington & King Perforating Co., Chicago, Ill.
Lamson & Sessions Co., Cleveland, Ohio	Flue Thimbles.	Gas (Oxygen).	
	Milwaukee Corrugating Co., Milwaukee, Wis.	Linde Air Products Co., New York, N. Y.	
Brakes—Bending.	Furnace Cement—Asbestos.	Glass—Wire.	Milwaukee Corrugating Co., Milwaukee, Wis.
Dreis & Krump Mfg. Co., Chicago, Ill.	Buckeye Products Co., The, Cincinnati, Ohio	Lupton's Sons Co., David, Philadelphia, Pa.	Friedley-Voshardt Co., Chicago, Ill.
Brakes—Cornices.	Connors Paint Mfg. Co., Wm., Troy, N. Y.	Grilles.	Lupton's Sons Co., David, Philadelphia, Pa.
Dreis & Krump Mfg. Co., Chicago, Ill.	Milwaukee Corrugating Co., Milwaukee, Wis.	Harrington & King Perforating Co., Chicago, Ill.	Milwaukee Corrugating Co., Milwaukee, Wis.
Brass and Copper.	Sall Mountain Co., Chicago, Ill.	Hart & Cooley Co., New Britain, Conn.	Milwaukee Corrugating Co., Milwaukee, Wis.
Copper & Brass Research As- sociation, New York	Furnace Cement—Liquid.	Independent Register & Mfg. Co., Cleveland, Ohio	
Merchant & Evans Co., Philadelphia, Pa.	Technical Products Co., Pittsburgh, Pa.	Tuttle & Bailey Mfg. Co., Chicago, Ill.	
Gases—Garbage.	Furnace Cleaners.	United States Register Co., Battle Creek, Mich.	
Geben Co., The J. M. & L. A., Cleveland, Ohio	Sturtevant Co., B. F., Boston, Mass.	Grilles—Store Front.	
Castings—Malleable.		Tuttle & Bailey Mfg. Co., Chicago, Ill.	
Fanner Mfg. Co., Cleveland, Ohio	Furnace Fans.	Guards—Machine and Bolt.	
Collars—Metal.	A. H. Robinson Company, Cleveland, Ohio	Harrington & King Perforating Co., Chicago, Ill.	
Friedley-Voshardt Co., Chicago, Ill.	Sturtevant Co., B. F., Boston, Mass.	Handles—Boiler.	
Milwaukee Corrugating Co., Milwaukee, Wis.	Warm Air Furnace Fan Co., The, Cleveland, Ohio	Berger Bros. Co., Philadelphia, Pa.	
Wheeling Corrugating Co., Wheeling, W. Va.	Furnace Rings.	Hangers—Eaves Trough.	
Chaplets.	Milwaukee Corrugating Co., Milwaukee, Wis.	Berger Co., L. D., Philadelphia, Pa.	
Fanner Mfg. Co., Cleveland, Ohio	Walworth Run Fdy. Co., Cleveland, Ohio	Milwaukee Corrugating Co., Milwaukee, Wis.	
Chains—Sash.			
Parker-Kalon Corp., New York, N. Y.	Furnace—Warm Air.	Heaters—Cabinet.	
Chimney Tops.	American Furnace Co., St. Louis, Mo.	Majestic Co., The, Huntington, Ind.	
S. O. Sapp, Tallula, Ill.	American Foundry & Furnace Co., Bloomington, Ill.	Mueller Furnace Co., L. J., Milwaukee, Wis.	
Standard Ventilator Co., Lewisburg, Pa.	Brillion Iron Works, Brillion, Wis.	Waterman-Waterbury Co., Minneapolis, Minn.	
Cleavers—Furnaces.	Chicago Furnace Supply Co., Chicago, Ill.		
Sturtevant Co., B. F., Boston, Mass.	Floral City Heater Co., Monroe, Mich.	Heaters—School Room.	
Cleavers—Section.	Forest City Fdy. & Mfg. Co., Cleveland, Ohio	Floral City Heater Co., Monroe, Mich.	
Sturtevant Co., B. F., Boston, Mass.	Hall-Neal Furnace Co., Indianapolis, Ind.	International Heater Co., Utica, New York	
Clawer Tonga.	Henry Furnace & Fdy. Co., Cleveland, Ohio	Meyer Furnace Co., The, Peoria, Ill.	
L. J. Mueller Furnace Co., Milwaukee, Wis.	Hess-Snyder Co., Massillon, Ohio	L. J. Mueller Furnace Co., Milwaukee, Wis.	
Coal Chutes.	Coldwater, Mich.	Standard Furnace & Supply Co., Omaha, Neb.	
Majestic Co., The, Huntington, Ind.	International Heater Co., Utica, N. Y.	Waterman-Waterbury Co., Minneapolis, Minn.	
Copper.	Keith Furnace Co., Des Moines, Ia.		
Copper & Brass Research As- sociation, New York	Lamneck Mfg. Co., St. Louis, Mo.	Heaters—Conductor.	
Cornices.	Lennox Furnace Co., Marshalltown, Ia.; Syracuse, N. Y.	Berger Co., L. D., Philadelphia, Pa.	
Friedley-Voshardt Co., Chicago, Ill.	Liberty Foundry Co., St. Louis, Mo.	Hotels.	
Milwaukee Corrugating Co., Milwaukee, Wis.	Majestic Co., The, Huntington, Ind.	Fort Shelby Hotel, Detroit, Mich.	
Out-offs—Rain Water.	Marshalltown Heater Co., Marshalltown, Iowa	Humidifiers.	
Milwaukee Corrugating Co., Milwaukee, Wis.	May-Plebeger Furnace Co., Newark, Ohio	Automatic Humidifier Co., Waterloo, Iowa	
Damper Clips.	Meyer Furnace Co., The, Peoria, Ill.	L. J. Mueller Furnace Co., Milwaukee, Wis.	
L. J. Mueller Furnace Co., Milwaukee, Wis.	Monitor Furnace Co., Cincinnati, Ohio	Robinson Furnace Co., Chicago, Ill.	
Doors—Metal.	Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.	Roemer Heating Co., Cleveland, Ohio	
Lupton's Sons Co., David, Philadelphia, Pa.	Mueller Furnace Co., L. J., Milwaukee, Wis.	Jobbers—Hardware.	
Drive Screws—Hardened Metallic.	Oakland Foundry Co., Belleville, Ill.	Clark-Smith Hardware Co., Peoria, Ill.	
Parker-Kalon Corp., 354 West 13th St., New York	Robinson Furnace Co., Chicago, Ill.	Kitchen Utensils.	
Eaves Trough.	Robinson Furnace Co., Chicago, Ill.	Lalance & Grosjean Mfg. Co., Chicago, Ill.	
Berger Bros. Co., Philadelphia, Pa.	Robinson Furnace Co., Chicago, Ill.	Lath—Expanded Metal.	
Berger Co., L. D., Philadelphia, Pa.	Robinson Furnace Co., Chicago, Ill.	Milwaukee Corrugating Co., Milwaukee, Wis.	
Clark-Smith Hardware Co., Peoria, Ill.	Robinson Furnace Co., Cleveland, Ohio	Machines—Crimping.	
Lupton's Sons Co., David, Philadelphia, Pa.	Ryboj Heater Co., Ashland, Ohio	Bertsch & Co., Cambridge City, Ind.	
Milwaukee Corrugating Co., Milwaukee, Wis.	Standard Furnace & Supply Co., Omaha, Neb.	Machineries—Culvert.	
New Jersey Zinc Sales Co., The, New York, N. Y.	St. Louis Heating Co., St. Louis, Mo.	Bertsch & Co., Cambridge City, Ind.	
Wheeling Corrugating Co., Wheeling, W. Va.	Success Heater Mfg. Co., Des Moines, Iowa	Machines—Tinsmiths.	
Elbows and Shoes—Conductor.	Thomas & Armstrong Co., London, Ohio	Bertsch & Co., Cambridge City, Ind.	
American Rolling Mill Co., Middletown, Ohio	Thatcher Co., Chicago, Ill.	Dreis & Krump Mfg. Co., Oak Park, Ill.	
Dieckmann Co., Ferdinand, Cincinnati, Ohio	Utica Heater Co., Utica, N. Y.	Marshalltown Mfg. Co., Marshalltown, Iowa	
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Lupton's Sons Co., David, Philadelphia, Pa.			
Milwaukee Corrugating Co., Milwaukee, Wis.			



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Capacity 1/4-inch through 16 gauge

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Tool shipped complete with 3 sets of Punches and Dies,
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WANTS AND SALES

Any yearly subscriber to AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired.

BUSINESS CHANCES

Lightning Rods—Dealers who are selling Lightning Protection will make money by writing us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddle Company, Marshfield, Wisconsin.

For Sale—We are discontinuing our sheet metal shop and offer this exceptional opportunity in Chicago's best business suburb. Complete, old-established sheet metal shop has been operated in connection with Evanston's oldest hardware store for 17 years. Does a fine class of new work as well as jobbing in a large territory. Buyer must continue as a union shop and must be a first class mechanic and estimator. Good immediate business in sight. For further particulars address North Shore Hardware Co., Evanston, Ill. 10-1t.

For Sale—Heating, plumbing and sheet metal business in eastern South Dakota doing a \$15,000 to \$25,000 business yearly. This is the only heating, plumbing and sheet metal business in the city of 1,500 population and also the only one in the county. Six good little towns in the county to draw from. Very small amount of money needed to take the business. If interested write C-74, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 11-3t

For Sale—Sheet metal shop with tools, except brake. Agency for leading furnace. Good town; fine farming country. Ill health cause of selling. Present invoice of stock and tools, \$1,600; first \$1,200 cash will buy it. Good location and reasonable rent. Address C-75, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 11-3t

For Sale—Sheet metal roofing shop with 4-foot and 8-foot brakes, roller bending, crimping and heavy shears, also plenty other machines and tools; delivery car with good business. For sale very reasonable if sold at once. Reason for selling, other business. Address 1211 Hastings, Detroit, Michigan. 11-3t

For Sale—Well established sheet metal business in Macomb, Illinois. Good opportunity for some one. Owing to advanced age will sell at a bargain. Material and tools about \$1,500.00. Address Sturm's Tin Shop, Macomb, Illinois. 12-3t

Wanted—To buy a small tinshop in a country town or will take charge of a shop with hardware firm on percentage basis. Address C-86, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t

BUSINESS CHANCES

For Sale—Sheet metal shop, including full set of tools. Only shop in town of 1,200. Old established business. Good territory. A paying proposition. Address C-76, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 11-3t

HELP WANTED

Wanted—At once, combination plumber and tinner for a country town of about 900. One who is willing to work the year around. No other need apply. This is a combination shop in connection with a hardware store. Married man preferred. State wages in first letter. Address C-67, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 10-3t

Wanted—At once, a combination plumber and tinner; one who is willing to work and can do his work right. I have a steady position for this man. We work ten hours per day. State wages in first letter. Address C-77, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 11-3t

Wanted—Sheet metal worker and furnace man, one who understands square duct work for ventilation. Can give a steady position the year around. Please state wages wanted and your qualifications and how soon you can come, in first letter. Address Noble Sheet Metal Works, Rhinelander, Wisconsin. 11-3t

Wanted—A first-class tinner, one that is able to take full charge of shop. Must be able to layout and do any kind of sheet metal work that comes along. Steady work the year around for a first-class man. Address C-79, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t

Wanted—First-class erecting mechanic to install dust collecting systems in New England and New York State. Single man preferred. State fully experience, age, references and rate per hour. P. O. Box 870, Hartford, Conn. 12-3t

Wanted—Experienced sheet metal workers and roofers. Must be experienced mechanics. State experience in first letter. Address Geisler Brothers, 544 Locust Street, Dubuque, Iowa. 12-3t

SITUATION WANTED

Situation Wanted—By a first-class plumber, tinner and furnace man; also steam, hot water heating and repair work. Have worked over thirty years at the trades. Married. Want a steady position with hardware shop. Prefer a position in a small city or town. Want two weeks' notice. Please state wages. Address C-83, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t

Situation Wanted—By heating engineer and estimator. 15 years' experience on furnace work. Can also direct installation and shop work. Can cut patterns, lay out and install any furnace. Familiar with the Standard Code. Available at once. Please state salary and location. Address C-84, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t

Situation Wanted—By first class tinner and furnace man. Can do inside and outside work. 25 years at the trade. Nothing but steady job the year around. Am married. Can do anything that comes in any tin shop. Address W. J. Mack, 106½ East Main Street, Saint Charles, Illinois. 11-3t

Situation Wanted—By tinner, sheet metal and furnace man; also can do plumbing. Position must be steady the year around. State wages and particulars in first letter. Married. Can come at once and furnish best of references. Address Lee O. Bailey, Parkston, South Dakota. 11-3t

SITUATION WANTED

Situation Wanted—First class inside sheet metal worker. Must be steady job. Address—Sam Dennis, General Delivery, Huntington, West Va. 10-3t

Situation Wanted—Man with experience would like position in plumbing or tinshop. Would also like to communicate with someone knowing of good location for electrical shop. Address—C-62, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 10-3t

Situation Wanted—By tinner and furnace man; small town in middle west states. Steady, reliable and a neat workman. Can do some plumbing and pump work. Would like position with hardware in connection. Steady position wanted more than large wages. Address C-72, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 11-3t

Situation Wanted—Or will buy working interest by generally experienced sheet metal worker of good health and habits. First class shop man and pattern cutter, neat and accurate mechanic. Can take charge if required. Address, with particulars—C-65, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 10-3t

Situation Wanted—Tinner and furnace worker with seven years' experience wishes location for year-around position. Missouri or Kansas preferred. Can come on two weeks' notice. Married. State wages and location. Address Front Apartment, 6309 Independence Avenue, Kansas City, Missouri. 11-3t

Situation Wanted—Sheet steel salesman would like to make arrangements to represent a sheet mill in Ohio and Indiana. Conversed with all grades of sheet steel and sheet metal formed products. Address C-82, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t

Situation Wanted—By experienced sheet metal worker. First-class on warm air heating and general tin work. Foreman for years. Want to make a change. No large city. Address C-71, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 10-3t

Situation Wanted—As salesman and director of furnace installation. Have had ten years' experience. Can estimate, lay out work, sell, and handle men. Address C-73, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 11-3t

Situation Wanted—A-1 sheet metal worker and expert draftsman is open for a position as pattern cutter or foreman of shop employing up to 50 men. Address—C-68, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 10-3t

Situation Wanted—By first class tinner and sheet metal pattern maker. Qualified in development of new work on up-to-date gas ranges. Address—C-64, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 10-3t

Situation Wanted—Good all-around hardware man. Open for good position. 15 years' experience. Can do plumbing and heating. Must be steady position. Address C-80, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t

Situation Wanted—In tinshop or hardware store. Married man with practical experience and able to furnish best of references. Address C-81, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t

TINNERS' TOOLS

For Sale or Trade—One self-feed drill, large size, 1 roofing folder, 1 solid mandrel stake, 1 stock and dies, cut 2 to 3 inch pipe, 1 stock and dies, cut to 1½ to 2" pipe. Wanted—20" barfolder, small turning machine, large turning machine. Address Charles Hahn, 5146 Irving Park Blvd., Chicago, Illinois. 12-3t

TINNERS' TOOLS

For Sale—One 36" Pexto Square shear has 2 sets of extensions for gauges long and short. This machine is as good as new. Used very little. My shop is small. Am using 30" shear rolls and folder now. Will sell at a bargain. Address A. A. Roberts, 366 Central Avenue, Highland Park, Illinois. 10-3t.

Wanted—A full set of second-hand tinner's tools. Same must be in good condition and reasonable. Address E. A. Schmidt, Wisconsin Rapids, Wisconsin. 12-3t.

Wanted—Tinners' tools and machines. Must be in first-class condition and priced low for cash. Address C-78, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t.

Wanted—Slip roll former for belt drive. Rolls 5" to 6" in diameter, and 36" to 42" long. Give full information, together with lowest price. P. O. Box 870, Hartford, Conn. 12-3t.

For Sale—One 8 foot double truss corrice brake, A-1 condition. A real buy. If interested write—The Barrett Co., Lakota, North Dakota. 10-3t.

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SALESMEN

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ROUND OAK HEATING CO.
711 South Wells Street
Chicago, Illinois

11-1t.

SITUATION WANTED

Young man who has had 8 years' experience selling furnaces wholesale and retail, desires a position with manufacturer. Prefer Pennsylvania, New Jersey or New York territory. Past record shows that I can produce. Address W-10, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

11-2t.

WANTED

Salesman calling on industrial plants, etc., in Illinois, to sell ventilating systems for an established manufacturer. Excellent opportunity for right man. Address W-11, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

12-3t.

SPECIAL NOTICES

I AM interested in a new opportunity as I have resigned my position as Chicago Branch Manager of Tuttle & Bailey Mfg. Co.

William P. Laffin
910 Wellington Ave.
Chicago, Illinois

SITUATION WANTED

As salesmanager of manufacturer's furnace dept., or traveling, by a man thoroughly competent by reason of 25 years' broad experience, character, integrity and ability. Extensive coal and gas stove experience. High class reference as proof of unusual record. Age 45, permanent residence Indiana. Available soon. Address W-12, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 12-3t.

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SALESMEN

We have three good territories open for experienced furnace salesmen, interested in multiplied opportunities for sales, backed by complete re-sale co-operation.

We need a good man for the state of Nebraska, also one for Missouri.

The line is the most complete in the heating equipment field, established nearly three-quarters of a century, including coal and gas-fired warm air furnaces and boilers, registers and furnace fittings, with an attractive list of specialties.

The opportunity is immediate. Write in complete confidence to W-7, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

8-2t.

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NEEDED

Several territories now open for experienced salesmen, who know the heating game. Our line includes everything in the heating line, for every kind of fuel. Write us in confidence, stating territory preference, and experience. Address L. J. Mueller Furnace Co., Milwaukee, Wis. 10-4t.

SPECIAL NOTICES

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REPRESENTATIVES WANTED

to handle complete line of furnace fittings for one of the oldest and best established firms in the country.

We want men in all the Northern, Southern and Western States to represent us either exclusively or in conjunction with some hardware or sheet metal line.

Experience in furnace fittings not necessary, but acquaintance with trade would be very helpful. Give full details in first letter.

Write at once to W-8, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 10-3t.

FOR SALE

We are discontinuing our sheet metal shop and offer this exceptional opportunity in Chicago's best business suburb. Complete, old-established sheet metal shop, has been operated in connection with Evanston's oldest hardware store for 17 years. Does a fine class of new work as well as jobbing in a large territory. Buyer must continue as a union shop and must be a first class mechanic and estimator. Good immediate business in sight. For further particulars address North Shore Hardware Co., Evanston, Illinois. 12-3t.

FURNACE BUSINESS FOR
SALE

Retail furnace business in a Pacific coast city can be purchased right. We have a profitable contract to distribute in Pacific coast territory for the manufacturer. Satisfactory reasons for selling. Right man who is entitled to credit can acquire this business with a reasonable down payment. Address, Pacific Furnace Dealer, in care of Lennox Furnace Company, Marshalltown, Iowa.

11-4t.

FOR SALE—PATENT
ON NEW DESIGN
STEEL FURNACE

MANUFACTURERS will be interested in the design of this steel warm air furnace which has features that—

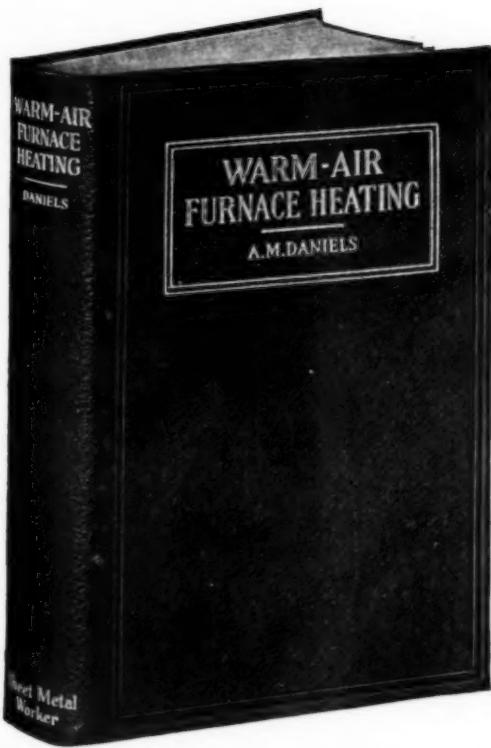
—cool the grate bars

—preheat the air

—save fuel by reason of efficient and practical means of causing more complete combustion.

THE patented features of this furnace are such that they can be used on furnaces now manufactured.

For full information and copy of PATENT PAPERS, address J. A. M. care of AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.



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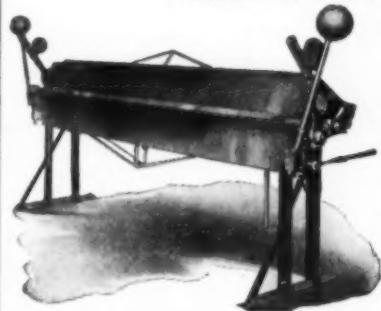
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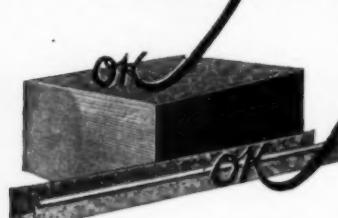
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Milcor Terne Plate Roofing was used on all the flat decks and Milcor Gutter and conductor Pipe assure thorough satisfaction as the rain-carrying equipment.

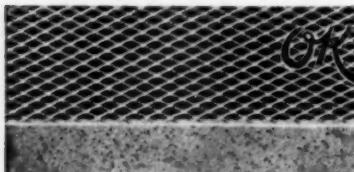


Milcor Titelock Metal Shingles won their O. K. from the standpoint of fine appearance, utility and economy. They insure a storm-tight, lightning safe, firesafe, durable, artistic roof.



Milcor Invisible Joint Metal Ceilings were O. K'd. because they offered the ideal firesafe, permanent, artistic ceiling demanded for this type of building, at reasonable cost. If you haven't a copy of the handsome new 288 page Catalog on Milcor Invisible Joint Metal Ceilings, be sure to write for one. It will help you sell more Metal ceilings.

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Bigger sales—better profits!

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One Dealer sold everything listed at the left, for this one building—a mighty fine order, at minimum selling expense. Chances are that some of this business would have slipped away if this Dealer had not had the complete Milcor Line at his command.

Your sales come easier, your selling costs are lower, your profits are better when you concentrate on Milcor.

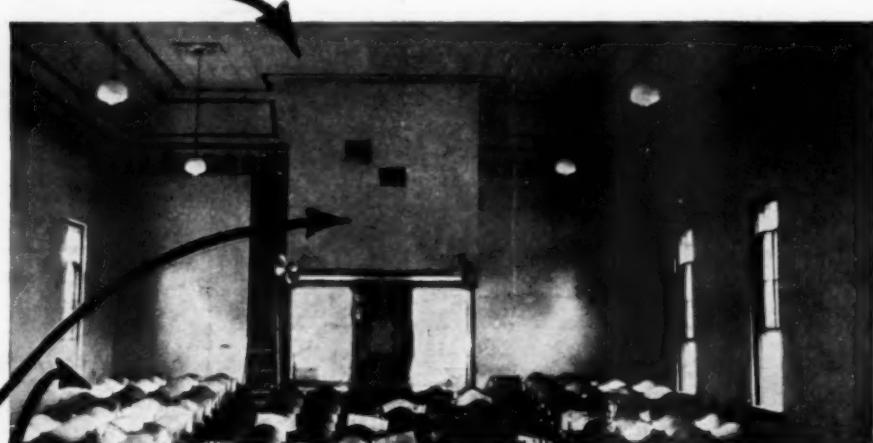
The service you get through Milcor is an important factor to consider. It isn't necessary to carry a big stock. Milcor assures you of immediate deliveries from its huge main plant in Milwaukee, or from its branches at Chicago, Kansas City and La Crosse. Leading Jobbers also carry the staple products in the Milcor Line. Insist on Milcor. Your trade will appreciate it.

Milcor Products are made in Steel, "Coppered Metal," "Wilder Metal," Zinc, Copper, and rust-resisting



Ingot Iron

Throughout every type of building—homes, schools, hospitals, hotels, apartments, stores, garages, churches, etc.—Milcor Products are being used to insure greater permanence, firesafeness, beauty, and economy. Progressive dealers who make the most of the completeness of the Milcor Line, find unlimited opportunities for big sales. One good product suggests all the others in the Milcor Line.



MILWAUKEE CORRUGATING COMPANY, MILWAUKEE, WIS.
CHICAGO, ILL. KANSAS CITY, MO. LACROSSE, WIS.

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SHEET METAL BUILDING PRODUCTS